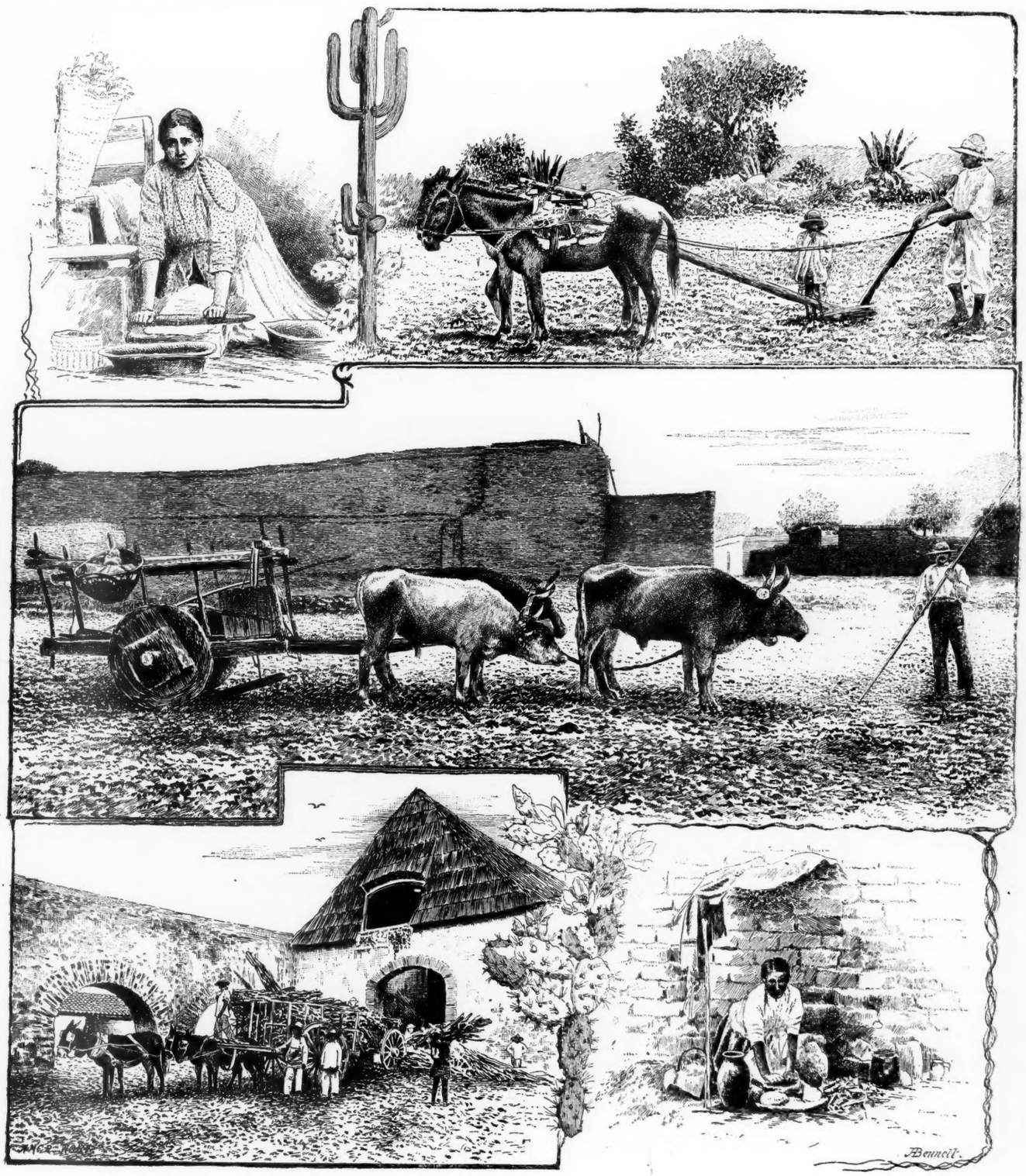
AMERICAN AGRICULTURIST

FOR THE

FARM · GARDEN · & · HOUSEHOLD

"AGRICULTURE IS THE MOST HEALTHFUL, MOST USEFUL, AND MOST NOBLE EMPLOYMENT OF MAN."—WASHINGTON.

VOLUME L.—No. 9. NEW YORK, SEPTEMBER, 1891. NEW SERIES—No. 556.



MEXICAN FARM SCENES.

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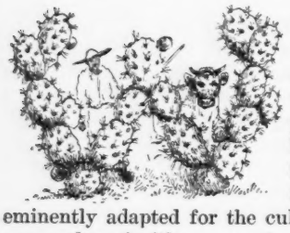
AGRICULTURE IN MEXICO.

I. N. FORD.



WHILE Mexico is generally reputed to be one of the richest, it is in reality one of the poorest agricultural countries on the American continent. It produces barely enough corn and beans to keep an impoverished population alive. With tropical belts on the Gulf and Pacific coasts pre-eminently adapted for the cultivation of sugar and cotton it has no surplus of either crop for export. There are no finer coffee lands in the world than the mountain slopes of Vera Cruz, Michoacan, Jalisco, Guerrero, and Oajaca; but the product is inconsiderable in comparison with that of Brazil. With the exception of hides and raw fiber, Mexico has only a small surplus of agricultural produce to send to the American market, which receives the bulk of the exports of South America and the West Indies. This inertia of its working population combined with a deficient water supply and an unprogressive agrarian system neutralizes the advantages of vast extent of territory, variety of natural products, and range of climate.

There is no conservatism like that of the Mexican peons. They are accustomed to the old methods of agriculture and they will not depart from them. I was greatly surprised during a recent journey from Yucatan and Vera Cruz to the hot lands of the Pacific and thence to the Rio Grande to find wherever I went the crooked-stick plow in use. On the largest haciendas American plows have been introduced, but the laborers dislike them, and are constantly running them against rocks and deliberately smashing them. Wherever farming is conducted on a small scale the ancient implement with its forked stick as a substitute for the share is used. Sometimes the shorter fork is pointed with iron, but invariably there is a single handle. A Yankee manufacturer, who had heard of the Mexican prejudice against big plows with double handles, undertook to supply the market with a little one with a light, single handle, but it proved to be neither one thing nor the other, and met with little favor. In Indian villages I saw ox-teams that were lashed to the longer stick by rawhide thongs fastened to their horns—as primitive a method of plowing as could well be imagined. The peons prefer their own implement because they do not consider it necessary to do more than to scratch the earth when they raise their corn, beans, and red peppers. Deep plowing in their estimation involves waste of energy in a land favored with perpetual summer and spring, and where the luxuriant magueyes grow without cultivation in every hollow and on every hillside.

The Mexican peasant has in addition to his antiquated plow a hoe and a sickle, each patterned after those used in Goshen under the Pharaohs. The hoe is ponderous and clumsy, and looks like a huge rammer. The sickle has a full set of teeth in place of a sharp edge. With the hoe rank growth of weeds is kept down and the irrigating trenches are opened and closed; and with the sickle the small grains are harvested. Improved reapers and cultivators are never seen except on a few large estates whose owners are suspected of having a weakness for fancy farming. Threshing machines have been introduced only in rare instances. They keep the old-time method of driving mules around a ring and having them thresh out the wheat with their heels, aided by the wind. Corn is the staple food of the population and it is husked by hand, and ground with a roller upon a stone after it has been soaked in hot water and lime overnight. The chief occupation of Mexican women of the lower classes is the preparation of tortillas or maize cakes, the paste when ground by the roller being baked in a shallow pan over a slow fire.

The farm vehicles in rural Mexico are of primeval construction. The wheels are solid sections cut from the trunks of trees with the pith punctured for the axle. The roads are so rough that any cart except a very heavy one with block wheels would be in imminent danger of dissolution, and hence conservatism may have its use in the retention of the old-time mule and ox carts to be seen everywhere on the high plateaux. Even when more modern vehicles are provided the wheels are made of enormous circumference. At some of the improved sugar works, for example, ricks for carrying cane, which is a load of very light weight, are mounted upon wheels large enough to move an obelisk.

Mexico has a vast territory with tropical belts on the Gulf and Pacific coasts available for the cultivation of tobacco, sugar and coffee on a large scale, and a broad plateau which by reason of its altitude is practically an extension of the temperate zone into Southern latitudes. Land alone will not make a country rich. There must be an abundant supply of water; there must be an enlightened agrarian system by which the number of self-interested cultivators can be increased year by year; and there must be an intelligent and industrious class of farming labor by which produce can be systematically handled. All these conditions are lacking in Mexico.

There are no large rivers, and the water supply is deficient throughout the elevated plateau. Mexican farms without systematic arrangements for irrigation are waste land. The great haciendas of what may be described as the temperate zone are supplied with water stored in reservoirs during the rainy season for distribution during the dry season. Small farmers, if they can purchase water rights from the large proprietors, are enabled to cultivate as much land as can be irrigated from the main trenches. As the rich land owners usually need all the water which they can control, it is difficult for small farmers to obtain irrigation privileges. Those who have a vested right derived by inheritance entitling them to a fixed amount of water per day during the dry season cannot increase the area under cultivation. In a country where there are few lakes and no forest tracts feeding great streams there are insuperable obstacles to the extension of irrigation facilities.

To this is added a complex system of land tenure which retards the subdivision of the great estates into small farms. The land owners are rich men who are lightly taxed and have no inclination either to improve their resources for irrigation or to sell portions of their estates which are not under cultivation. The creation of an industrious class of small farmers is prevented in this way. There is no movement of emigrants from Europe into Mexico. The laboring population is recruited wholly from the native peons—as degraded and improvident a farming class as can be found in any country. It is upon the labor of constitutionally indolent Indians and half-breeds who are content to work one or two days out of seven, and to support their families on seventy or eighty cents a week, that the future of Mexican agriculture is dependent. Improved agricultural machinery is enabling the more enterprising land owners to dispense with a portion of this labor, but American plows, harvesters and threshing machines cannot be operated without peons, and there is a strong native prejudice against every new mechanical device. In order that Mexico may be converted into a rich agricultural country, a series of miracles needs to be wrought. Even if improved machinery can be introduced on a large scale—and it was only in Monterey and San Luis Potosi that I found a complete stock of American implements available in warehouses—and if the peons can gradually be trained in industrial habits the land tenure system cannot be changed without a social revolution, nor can the water supply be increased so as to be equal to the requirements of agricultural industries competing with those of the United States.

[The central picture in our frontispiece shows the usual ox team and cart, the driver having his long rod for guiding the oxen. Large adobe buildings, made of sundried bricks, are seen in the background. At the upper left hand corner is a peasant woman crushing corn for tortillas. At her right is a farmer plowing his field. At the lower left hand corner is a mule team and cart, on which sugar cane is being loaded, and at the right of it is a woman kneading tortillas.]

SPECIAL VS. GENERAL FARMING.

JAMES K. REEVE, OHIO.

We frequently hear the expression, regarding some certain man of our acquaintance, that he is "Jack at all trades, and master of none." The meaning is so obvious that the phrase hardly needs explanation. The man can do almost anything, after some fashion, but is not thoroughly proficient in any one particular. An instance of this came within my own experience recently. I wanted a man for some work about the house and yard—cleaning carpets, painting porches, laying sod, making flower beds, digging weeds out of the lawn, and all the countless items of "spring work" about a country home. For this I employed an honest, faithful, intelligent and industrious laboring man who could and would attend to all these things properly with some slight instruction and supervision by myself. For this work I paid him six dollars per week, a dollar a day being the ordinary wages of a laboring man in this locality.

At the same time I wanted a man to lay some tile hearths, and

for this I employed a mason, paying him six dollars for two days work, or as much as the other man earned in a week. The work, moreover, was not so severe as that done by the man who was receiving the least pay. When settling with them both I really felt sorry for the one who had been compelled to work three times as long as the other to earn the same money. The difference between the men and between their earning capacity lay in the fact that the mason knew how to do one thing, and to do it well. He was not physically as strong as the other, and could not have laid as much sod nor dug up as much ground in a day. But he knew how to handle mortar and cement, and brick and tile.

Now it seems to me that this is just the difference between special and general farming. It is not so much a question of men, or soils, or location, or whether one crop pays better than another: But it is mainly a question of a farmer who is a "Jack at all trades," agriculturally speaking, and the farmer who is master of one. The farmer who grows a little corn and a little wheat, has a few cows, a few hogs and a few sheep, sells a little butter and a few eggs and some garden truck may get along fairly well with all of these. He may be an ordinarily good grain grower, and stock feeder, and dairyman, and poultry keeper, and gardener. But he has no especial knowledge of any one of these branches which would make him particularly valuable if another were to employ him for any one of these purposes, and if not valuable to another a man could hardly expect to be so to himself. As a general farmer he might find employment at from sixteen to twenty dollars per month, and it would be an open question if his employer would make much profit from his labor. As a specialist—say as a fruit grower, understanding the planting, cultivation, propagation, fertilizing, picking, handling and marketing of fruits; or as a dairyman, understanding the selection, care, breeding and feeding of cows and the handling of the products he would be worth and could receive twice the above wages, and his employer would stand a much better chance of profit from his services. And if worth so much more to others he would certainly be worth as much to himself upon his own land and working solely for his own interests.

Even in the growing of wheat or corn it will pay to be a specialist. That means to study varieties, selection of seed, methods of planting, cultivating and fertilizing; the habits of growth of the plant, and the possibilities in the way of production by the application of methods of intensive cultivation.

It is a fine faculty to be able to do many things, and do them all well. But for the attainment of the best success must also go with it the ability to do at least one thing extraordinarily well.

Young men upon the farm and those who go from the farm to the agricultural colleges in particular would do well to study this matter of special farming most thoroughly, and if they will look about them they will see that the practice of taking up special branches is being followed more and more in other trades and professions. Physicians are specialists in throat or lung diseases, or in eye or ear troubles. Attorneys take up railroad practice, or corporation practice, or make a specialty of the study of constitutional law. The village merchant is a boot and shoe dealer, a clothing dealer, a grocer, or a dry goods dealer. And where such special lines are taken up and studied and faithfully adhered to it will generally be found that a greater measure of financial success has resulted. It is not particularly because one line is in itself more profitable than another, but because the genius and ability of the man is concentrated in one direction.

A farmer specialist need not confine himself solely to the specialty, but should give it all the time, attention and study needed to insure most complete success. The man who does this will find his work not only more profitable but more congenial than if he were required to expend his energies constantly in a dozen different directions.

FEEDING EXPERIMENTS.

F. D. COBURN, KANSAS.

A subscriber to the AMERICAN AGRICULTURIST, from Washington, D. C. writes me: "In a recent number of the AMERICAN AGRICULTURIST you state that limited experiments have demonstrated that cooked feed will make more pork than uncooked. I am skeptical, as I regard such experimental results as of exceptional nature, much as we find among human beings where abnormal powers of assimilation tend to obesity no matter what food is used. Have the experiments of our Experiment Stations in any State tended to confirm this conclusion? To the contrary, all, in so far as I have seen, support the opposite view. I would be pleased to learn where extended experiments, with scientific precision, show that the cooked foods give better results."

Practically all the experiments in that line of which I have knowledge indicate that, other things being equal, cooked grains fed to swine will yield a greater return than the same quantities of the same foods would if consumed raw. I do not pretend to assert that this is an infallible proposition or that other experimenters at experiment stations or elsewhere have not obtained different results. Unlike my questioner I am not "skeptical about such experimental results—those referred to by me in the AMERICAN AGRICULTURIST—being of an exceptional nature, much as we find among human beings where abnormal powers of assimilation tend to obesity no matter what food is used." It is quite too early in the history of the experiment stations for the public to have available "the extended experiments made with scientific precision" he inquires for, or which would definitely settle a question like this, interesting if not largely important.

SEPARATORS IN THE HIVE.

W. Z. HUTCHINSON, MICHIGAN.

By filling the frames with sheets of foundation we can secure perfectly straight, even combs in the brood nest. Why will not the same treatment of the sections result in straight combs? Because all comb in which brood is reared must be of a certain thickness, while store combs may vary in thickness from half an inch to four inches. Bees place their brood combs an inch and a half apart from center to center, and the nearer our sections approach this width the more perfect will be the combs when no separators are used. It is well nigh impossible to secure perfect combs when the sections are two inches wide, unless separators are used. When the sections are only an inch and three-quarters wide, fair success may be attained with no separators if other conditions are right. When the sections are a scant inch and three-quarters, or seven-to-the-foot, but little would be gained, so far as securing straight combs without separators is concerned, by having them narrower.

Aside from the width of sections used, the need of separators depends somewhat upon the fixtures and methods employed, but principally upon the locality. Perhaps it will be asked what bearing locality has. It has this: When the honey flow commences suddenly, comes with a rush while it lasts, and stops off short at the end, the combs are all begun at about the same time, all grow together and are alike, and are finished at the same time; hence, they are straight and perfect—no thick, thin, or bulged combs. When the honey resources, or the changes in the weather are such that the honey flow begins slowly, or having commenced is not steady, it is difficult to secure perfect combs unless separators are used. If the honey flow is light at first the bees will begin work in the central sections over the brood nest, and when the cells of the most advanced sections have reached that length where, in order to produce a straight, perfect comb, they ought to be sealed over, the bees do not seal them, because the work in the adjoining section is not sufficiently advanced to reduce the space between the comb to the right distance. The bees continue to draw out or lengthen the cells of both sections, and the result is that the comb of the most advanced section is bulged out, and the adjoining side of the next comb is made correspondingly concave. Then the outer side of this second section is made convex and bulges into the next section; and this series of curves is continued, increasing with each section, until the outside section is reached, which cannot be bulged upon the outside because the side of the case is in the way, consequently this outside section is a slim affair.

If the first case of sections given a colony in the spring can be filled with partly finished combs kept over from the previous season, I think it results in several advantages, one of which is that by a little care in arranging the combs those with cells of about equal depths can be placed together. The combs nearest completion can be placed in the corners and on the outside, and those with the shortest cells in the center. By this method nearly all the combs are completed at about the same time and with but little bulging; and by the time another case of sections is needed the colony will have increased in numbers and the flow of honey become so great that work will be commenced at once upon all of the sections.

So far as dispensing with separators is concerned, it may be well to be a little slow in giving sections, unless they can be filled with comb as just mentioned. I have waited before giving sections

to a colony until it was overflowing with bees and the flow of honey from clover fully established. Within five minutes after giving the case it was full of bees and they were at work cleaning out the foundation in every section. I am not inclined to indorse this method, particularly if the bees are Italians, as this variety of bees is loath to store honey at any great distance from the brood nest, and every enticement should be offered to induce them to begin work in the sections, and thus relieve the pressure upon the brood nest. Nothing will start bees to swarming any quicker than to have no place to store their honey except in the brood nest.

Aside from their cost, I know of no objection to the use of separators. Upon the amount of surplus honey secured, I believe their use has no influence. When they are used there is a trifle more labor until we come to crating the honey for market, when the extra labor is more than all that was avoided before, particularly if the combs are very much bulged when no separators are used. In the latter case a simpler form of super may be used.

But, shall I use separators? That is the question that each beekeeper must answer for himself. If he cannot secure straight combs without, yes. By straight combs is not necessarily meant combs as straight as a board, but so straight that they may be crated or pulled out of the crate or case without injury to the combs. If a man can secure nearly all straight combs and has a market for bulged sections, separators involve a useless expense.

RICE CULTURE IN LOUISIANA.

ANDREWS WILKINSON, LOUISIANA.

The first requisite to profitable rice culture is a comparatively level piece of land properly plowed and pulverized. This field must be located so as to be conveniently irrigated from the prairie reservoir or the flume in the levee. The only profitable rice in Louisiana is the aquatic plant. Highland rice does not pay. Water is the first and last want of sprouting, growing, and ripening rice. The plowed and harrowed field is divided into perfectly level plats by a system of little sub-levees and watering ditches. The ground is then planted in drills, dry, by machines, or by broadcast handsowing when wet. The latter plan is more common in Louisiana. The soil is next thoroughly saturated with water to sprout the seed. When the seeds have evenly germinated the water is drawn off until the tender shoots of the plant rise two or three inches above the ground.

This water manipulation requires the most watchful care. The young plants may be either drowned out or dried up by the least inattention in regulating the flow, or with too much water crawfish invade the fields and devour the delicate shoots, or with none at all, rice caterpillars cut them down and kill them. Neglect of the main flume, in the river region may result in the total loss of its subjective crop, or the destruction of cattle and crops in several Parishes. When the rice is six inches to a foot high it must be liberally watered, and then be weeded by hand. The laborers wade through the rice, pulling up and throwing into heaps all weeds and water grasses they find. This "grassing" costs from two dollars to six dollars an acre. After "grassing," the rice is let alone except for being irrigated steadily for two or three months with the "long flow." When the plants are heading, abundant summer rains are great helps in filling the grains, which artificial irrigation does not serve to do as well alone in hot droughts.

When the rice heads are "in the milk" a tremendous war begins between men and birds as to who shall harvest the crop. Swarms of ricebirds, flocks of English sparrows, summer ducks, different species of rail, and other fowls of the air and water, all come up unbidden to the great feast. From daybreak to dark a perfect fusilade from the guns and old muskets of birdminders is heard in hundreds of square miles of country. Over that may sound the shrill shouts of Creole farmers, shrieking out Sunday school language in French patois; from yonder rise the resonant whoops of negro field hands, and nearer are heard the hoarse adjurations of the new American rice growers, who come from the Northern wheat fields. It is whoop!—pop!—scream!—bang!—boom!—boom! in the noisiest battle that ever was heard, from dawn to dark, with quite a large part of a State for the battlefield. Rice birds form the greater part of the foes. Millions of them are slain and drop ungathered in the fields, while other millions come in to take their places. Some years the ravages of these birds are fearful; in others flocks are rarely seen. Why, no one understands, unless that they are summering in South Carolina or vicinity. Whenever a general pale yellow tint appears over the level heads of the ripening grain the water is carefully drawn off, the fields are drained as thoroughly as possible, and the work of harvesting is commenced. The dried sheaves are carted direct from the stubble to the steam thresher, shocked in the field, or hauled up to high land to be stacked and threshed, when the winter market brings generally better prices than prevail at the harvest time.

Work in the rice field should be commenced about February first, with plowing and preparing the ground. It should be finished by October first, with the last sheaf threshed, or safely stacked. In Louisiana this crop is almost infallible. Its three principal sources of injury are West Indian hurricanes, protracted summer droughts which prevent the proper filling of the heads, and wet harvest seasons. The hurricane of August 18th, 1888 whipped the heads off of unreaped rice in Louisiana, blew away shocks and stacks, and destroyed probably more than 200,000 barrels of rice. Before that catastrophe the crop was estimated at more than a million barrels. It gave but 790,000 barrels. There have been no such storms since that year; and they seldom occur more than once in a decade, though less severe blows are felt nearly every year in August or September. Damage from long summer droughts are partly averted by supplying abundant irrigation water through steam-pumping machinery, of which there are several hundred separate plants in the State. Loss from a wet harvesting season is unavoidable, as it is in wheat and other cereals.

Perfectly new lands in Louisiana, properly managed, yield from twenty to twenty-five barrels of rough rice to the acre, viz: sixty to seventy-five bushels. Lands well cared for, cultivated several years, give from fifteen to twenty barrels per acre. Old lands, fairly treated, return from ten to fifteen barrels. Rice is a plant which is generous to the attentive and industrious husbandman, but it resents neglect more than any other cereal known in the world, as those will find out who allow it to hunger or thirst. A man producing rice by his personal labor should work as one of a group of four or eight, pooling their interests. He should cultivate fifteen acres of rice land in the river region, or twenty acres in the Prairie district, where teams are more serviceable. If strong and industrious, devoting all his time and work to it he could between February first and October first, he should produce from one thousand to twelve hundred bushels of rough rice worth, at present prices, about a dollar a bushel at his shipping point. He would need another man equal to himself in the harvest month. He could do much less overcropping by himself.

Mr. John Dymond, formerly of Ohio, but now a prominent and progressive Louisiana sugar and rice planter, President of the Sugar Planters' State Association, has made over thirty barrels of rice to the acre on more than a hundred acres of new land. Messrs LeBourgeois, of St. James Parish, have made twenty barrels to the acre on a fifteen thousand barrel crop. The Duson brothers of Acadia made last season a twenty thousand barrel crop, the largest single crop ever produced in Louisiana. Hundreds of instances of like results might be reported to show what can be done, by what has been done. The Creoles of Plaquemines still average about twelve and one-half barrels on their very ancient lands, while the still more limited negro rice farmers along the Mississippi river make about ten barrels to the acre. In their four months' interregnum of rest the smaller Creole rice farmers put in from two to three months working in the sugar houses of their neighbors during the season of cane harvest. There they earn from fifty to seventy-five dollars a month. Even with the help of their rice-field allies the Louisiana sugar planters could not get enough labor last season to harvest all of their great sugar crop.

The days when the Creole ponies trotted around, turning the long wooden mill levers to the music of many "sacrés!" "for-tonneres!" etc., have long since departed. Now planters and farmers both send their rough rice to market, where it is bought by the millers, which is much better than paying toll and receiving cleaned rice. New Orleans is now the chief rice-milling city of America. Seventy-five years ago there was not a rice mill in that city. Now it contains sixteen such establishments, working two hundred and twenty rice pounders and employing more than twelve hundred men. Working all the year, and helped by four other large steam mills in different parts of the rice region, the mills of the Crescent city will be hard pressed to handle all of last season's crop. Louisiana, always the Sugar State, is now the Rice State of the Union. The future production of the aquatic cereal promises to supply the entire country, as is indicated by the past three years' phenomenal growth of the rice industry in her Prairie Parishes.

THE AMARYLLIS.

C. L. ALLEN, LONG ISLAND.

Formerly the genus Amaryllis comprised a large number of species, several of which have recently been separated, and now form distinct genera. For instance, all of what are popularly known as Amaryllis are now classed as Hippeastrum, and there now remains in the genus but one species, *A. Belladonna*, of which there are several varieties. *A. Belladonna* should be extensively grown, as its cultivation is very simple, and the flowers are the most beautiful of any of the natural order to which they belong. To grow these well, a frame is necessary, and when once planted they should remain undisturbed for years. The bulbs are nearly hardy, and will live through our winters with but little protection. The bulbs should be planted when at rest, and they will flower in August or early in September, the flower spike preceding the leaves. After flowering, leaf growth must be encouraged, as upon this the next season's flowers will depend. Should there be an appearance of frost before the bulbs have perfected their growth, they must be protected by sash. Upon the approach of winter fill the frame with leaves, put on the sash to keep out the rain, and let them remain undisturbed until spring. It is a good plan to leave a slight covering of leaves over the bulbs until they flower, which will keep the soil moist and cool. For pot culture they are not well adapted, at least they are not as satisfactory as some other species of the Amaryllis Order. *Hippeastrum*, of which there are a great number of species and varieties, all of which are eminently ornamental, are of easy culture; all they require is a strong soil and alternately a season of growth and a season of rest. To provide this effectually, when growth commences, the plants should be abundantly supplied with water, heat and light. In the greenhouse they should be placed near the glass when they are coming into flower. The flower stem is the first appearance of growth, and is pushed forward rapidly until the flowers are fully perfected. Leaf growth commences afterward and is quite as rapid. During this period there should be no check or rest, and a liberal supply of liquid manure should be given once in two weeks. When the leaves cease to grow water should be gradually withheld, and the plants allowed to become quite dry. When in this state they may be placed in any obscure part of the greenhouse where it is dry and where the temperature does not fall below the freezing point. If kept in such a situation during winter, many of the herbaceous kinds may be turned out into the border in spring, where they will flower freely and increase rapidly. Yet it is not advisable to grow them otherwise than as pot plants. The chief value of these bulbs is to produce flowers in the winter season, which they readily do if kept dry and dormant during the latter part of the summer and autumn. With a number of bulbs, by careful management, a succession of flowers may be had the entire year. In this genus there are a number of evergreen species, prominent among which is *H. Aulica* (*Amaryllis Aulica*), of which there are several varieties. These do not need absolute rest, although they require partial rest after perfecting their growth, and should be given water sufficient to keep their leaves from drooping. All the species increase rapidly by offsets, but they should not be disturbed until there is a natural division and the offsets are well rooted, then they will naturally separate from the parent bulb without causing much of a wound in breaking off. Separations should be made with great care so as not to damage the roots, as they are very slow to recover from such injuries. The young bulbs should be potted singly, using but small pots; those not more than twice the diameter of the bulbs are to be preferred. The most frequent mistakes made in Amaryllis culture consist in using too large pots, placing the bulbs too deep in the soil, and in shifting them too frequently. The bulbs should not be more than half covered with soil, and they should not be shifted until the pots have become completely filled with roots, then use pots but one size larger than those they have formerly occupied. Shift the bulbs only when they are at rest, and remove the offsets, if need be, at about the same time.

PROMINENT TYPES OF AMARYLLIS.

The *Sprekelia*, or what is commonly known as *Amaryllis formosissima*, is one of the most interesting genera of this order. It is also known as the Jacobæan Lily, on account of the brilliant scarlet of its flowers, which the Spaniards in Peru thought resembled the scarlet swords worn by the order of the Knights of St. James. These bulbs may be planted out in May and treated in precisely the same manner as the gladiolus. Their intense scarlet and curiously-shaped flowers appear before the leaves, and are decidedly ornamental. Upon the approach of cold weather the bulbs should be taken up and spread thinly, without cutting the leaves, in some dry place, secure from frost, where they can remain until the following spring. If planted in a dry, warm border, and given but a slight protection of three or four inches of newly-fallen leaves they will remain without injury during the winter, and flower more vigorously than if taken up. They increase rapidly by offsets, which should be separated when planted.

Zephyranthes.—The best known species of the genus, *Z. Atamasco*, was formerly called *Amaryllis Atamasco*, and is one of the most useful of our summer-flowering bulbs. *Z. Grosea*, popularly known

VALLOTA PURPUREA.

as Fairy Lily, has beautiful pink flowers, which are produced in great abundance the entire summer. The bulbs may be planted in the open border in early spring, and with slight protection during winter they may remain undisturbed a number of years. The flowers, about three inches in diameter, are produced singly on entire stems six inches long. The bulbs increase rapidly, and for effect should be grown in masses. *Z. candida* is a Peruvian species, with pure white flowers, somewhat cup-shaped, and rushlike leaves. The bulbs are quite small, and grow in large clusters. It is very free flowering, particularly in autumn, and is nearly hardy. It makes a splendid border plant. The bulbs of both species, if taken up, should be kept in a dry room during winter, and just above the freezing point. When taken up the leaves should not be cut.

Vallota purpurea, formerly called *Amaryllis purpurea*, and popularly the Scarborough Lily, is a glorious plant, one of the most showy and useful of the Amaryllis Family. It is an evergreen plant, the bulb producing its splendid spikes of bright scarlet blossoms—not purple, as the name implies—in August, and occasionally at other periods. It does best with ordinary pot culture, requiring liberal watering except for a few months in winter. The bulbs should not often be separated but occasionally shifted into larger pots when they become thoroughly root-bound. Too frequent shiftings are injurious to these bulbs; they do much better when pinched, and it is not an uncommon occurrence to see twenty-five flower spikes, with five or more flowers each, at one time from a ten-inch pot of the bulbs. They increase rapidly from offsets, which may be picked off the top of the pot without disturbing the large bulbs. This is decidedly the flower for the people, as it delights as well to grow in a tin can, broken pitcher, or in anything that will hold earth, as in the most elaborate greenhouse. All that is necessary is to water it freely when in active growth, and when at rest just sufficiently to keep the soil from becoming dusty. When at rest the pots can be set in any convenient place, away from frost and where they can have a little light, as all evergreen plants perish if kept too long in the dark. [The cluster of flowers in the lower left corner of our engraving on the preceding page represents *Amaryllis Belladonna*, the large central flower spike gives a good idea of the genus *Hippeastrum*, *Sprekelia formosissima* is seen in the lower right corner, and *Zephyranthes* is depicted in the small flower at the top.]

THE LEAF-CRUMPLER.

PROF. CLARENCE M. WEED, NEW HAMPSHIRE.

During the winter and spring months one often finds upon the twigs of various fruit trees masses of dry, brown leaves surrounding a long, horn-like, tubular case. If one of these cases be carefully cut open it will be found to contain a brownish worm or caterpillar about half an inch long. This insect is the leaf-crumpler, and it often becomes one of the most injurious of orchard pests. The adult insect is a small, grayish moth that appears during June or July, and deposits eggs on the various trees that serve as food plants for the larvæ. These include the apple, quince, and possibly the peach, as well as both the wild and cultivated varieties of the cherry, plum, and crab-apple. From these eggs there soon hatch small brownish worms that construct tubular, silken cases (Fig. 1) within which they remain concealed when not eating. As they grow larger they draw about the openings of their abodes many partially eaten leaves, so that by autumn there is quite a bunch surrounding each case. (Fig. 2.) At the approach of cold weather the cases are attached to the twigs by means of silken threads, the larvæ frequently gnawing away the tender bark to insure a firm hold; and thus the winter is passed. As soon in spring as the leaves begin to appear the larvæ attack them, frequently eating out the flower buds as well. The front part of a larva is seen in Fig. 3. They continue feeding and growing until sometime in June, when they become pupæ, pupating within the cases. About a fortnight later the moths emerge, and thus the life cycle is completed. The perfect insect is shown at Fig. 4, somewhat enlarged. Fortunately there are several species of parasites that help to keep this insect in check. In young orchards the larval cases are easily picked off during winter. They may then be burned or, what is probably better, carried to a considerable distance from their food plants, and left on the ground, thus allowing the parasites to develop and escape. The leaf-crumpler larvæ are also liable to destruction by spraying with Paris green or London purple, and may easily be held in check in this way. In orchards regularly sprayed for the codlin moth this, as well as other leaf-eating apple pests, will rarely prove troublesome. Not only should all the larval cases possible be picked off during winter, but spraying should be commenced early also. The larvæ are more easily and profitably destroyed while young and tender, and before they have done much damage to the leaves and flower buds. One great reason why fruit-growers often fail to keep insect as well as fungus enemies in check is because they neglect the spraying until the harm is done.

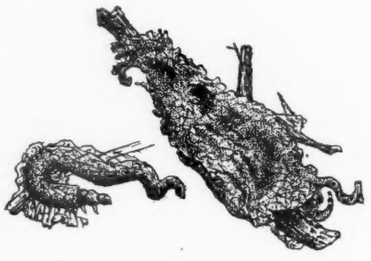


FIG. 1. FIG. 2.

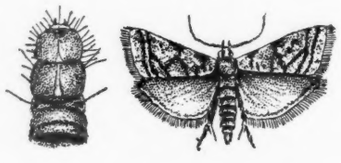


FIG. 3. FIG. 4.

THE CERIMAN (*Monstera deliciosa*).

G. GALE, FLORIDA.

This strange plant is a native of the Island of Trinidad, and is of so recent introduction to Florida that few persons have seen it fruiting. The plant (an exact representation of which is seen in the accompanying engraving) has been growing unprotected in our open grounds on Lake Worth for about three years. It seems suited to a sandy soil, but demands plenty of water. It is a scrambling plant of very rank growth, sending out aerial roots from each joint, by which it clings to any support, and by which, in its native home, it climbs to the tops of the highest trees. The leaves are fully three feet in diameter, mounted on leaf-stalks three feet long. These leaves are parted irregularly on the edges, and pierced by innumerable oval holes. No two leaves are alike as to the number or shape of these openings. The fruit resembles an elongated pine cone, from eight to ten inches long, covered with hexagonal scales, which come off readily when ripe, leaving the edible center like a large banana. The fruit is without seeds, and is said, in taste, to be a sort of cross between "the banana and pineapple, though superior to

THE CERIMAN.

either." Whether the testimony of experience will corroborate this high praise of the fruit, time alone can decide. If the fruit is as desirable as reported, there seems to be no good reason why it may not be cultivated in the southern portion of Florida and California.

LESSONS OF THE STRAWBERRY SEASON.

T. J. DWYER, NEW YORK.

This year's strawberry season along the Hudson river taught a lasting lesson to many large fruit-growers for market, and to many thousands who only grow enough for their family use. The great majority of strawberry-growers plant only one, or at most two, varieties. As a rule they select intermediate varieties which ripen with the flush of the market. While this is a mistake at any time it was more noticeable this year, for the reason that these varieties suffered considerably more than the very early and late sorts from the drought which prevailed at the time they needed most rain. The early berries had been nearly all picked, and were not seriously injured, while the late varieties were not far enough advanced to be materially harmed before the rain came.

Another grave mistake which caused serious loss was the old and groundless idea that strawberries should not be cultivated in the spring. Many years' experience has demonstrated that we can increase the yield and size of our fruit by deep cultivation in the early spring, using the plow for this purpose, and keeping the ground mellow with the cultivator up to the time of blossoming. This is the treatment that helps any crop to cope with a drought. But probably the worst mistake any fruit-grower can make is to allow his plants to form a wide, matted row of four, five, and even six feet. Plants so grown suffer much more than those growing in narrow rows. When the matted-row system of growing strawberries is adopted the rows should never be more than two feet in width, and with the rank growers eighteen inches is better.

Lovett's Early is without doubt the most promising of the early new varieties. The plants are rank and vigorous growers, the fruit

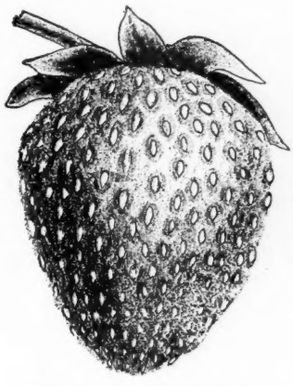


FIG. 1. PARKER EARLE.

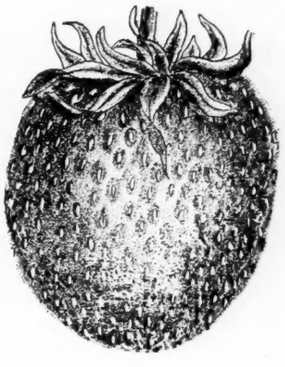


FIG. 2. CUMBERLAND.

ripens early, is large and uniform in size, firm, of a high, rich color, splendid in flavor. It is perfect-flowering and very desirable as an early variety, and a prolific bearer.

Parker Earle (Fig. 1), a late variety of good promise, ripened June 15; produces medium-sized fruit, which is rather long in shape, of high color, firm for market, and excellent in flavor. The plants are good growers, bear well; flowers perfect.

Warfield is termed a pistillate variety, but has a few small stamens on its blossoms. It ripened May 28, the fruit lasting for twelve days, most of it selling for thirty cents per quart. The plants are feeble growers but very productive of medium-sized fruit, of good color, and moderately fair in flavor. It is an improvement on the Crescent.

Jessie ripened June 1, and did much better than last season. It is a fine, handsome, early, large, firm, sweet, attractive berry. The plants are good growers, the flowers having plenty of stamens, but it is not as productive as many other early sorts.

Monmouth ripened June 1, and is a small, early, sour, productive variety, and rather a poor grower.

Haverland (pistillate).—After this year's fruiting I am satisfied that the Haverland has come to stay. My vines were loaded with fruit, which was a little larger than Charles Downing. It is long in

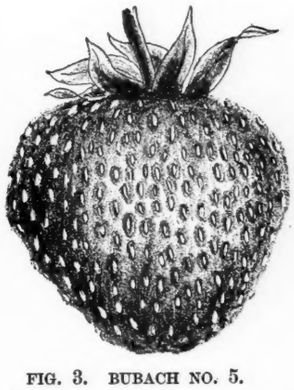


FIG. 3. BUBACH NO. 5.

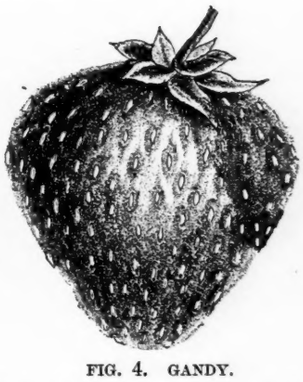


FIG. 4. GANDY.

shape, the fruit ripening evenly all over, of very fair quality, and a good shipper. The plants are strong, healthy growers. It ripened June 1, with the Cumberland, Jessie, and others. The Haverland has no stamens, and needs to be fertilized with a perfect-flowering kind that ripens with it, when it will give astonishingly good results.

Cumberland (Fig. 2) ripened its first fruit on June 1, and June 30 the last picking was made. Its long fruit season this year is no exception, for it continues a long time in bearing every year. It has become a very popular early berry and a general favorite wherever

known. The plants are fine, strong, healthy growers, with large, handsome foliage. One of its most commendable features is its fertilizing power, owing to its long season of fruiting. It can, therefore, be depended upon to fertilize any of the early or late pistillate kinds. The Cumberland is immensely productive of large, round, uniform berries. The color is a bright red. In the crate they present a most attractive appearance. It has the ideal strawberry flavor, acid and sugar combined, with enough of each to make it sprightly and pleasant.

Bubach No. 5 (Fig. 3) ripened all its fruit from June 4 to June 16. This variety has taken a prominent position in strawberry culture, in most cases taking the place of the Sharpless, which it resembles in shape and color, but it is fully double as productive as that variety. This berry is a wonder in its season of fruit, completely covering the ground about the plants with large berries. The Bubach is a strictly pistillate variety and needs to be well fertilized with the Cumberland or some other perfect-flowering kind. The fruit is large and irregular in shape, holding out quite large until the last picking. The flavor is ordinarily good.

Charles Downing ripened its fruit between June 8 and June 24, and is one of the few old standard varieties that is able to hold its own with the good new kinds. The Downing is a good, reliable berry, especially valuable for home use, and with proper care a bed of this sort will last for several years without replanting. The plants are rather frail growers, but always productive of good, average-sized fruit, which has a decided fine flavor of its own.

Sharpless, which is a large, firm, high-colored, sweet fruit, with a white tip, ripened from June 12 to June 25. The plants are robust growers, only moderately productive, valuable for those who like an extra sweet berry, and to those who are in need of a large berry for distant shipment. The Sharpless has perfect flowers.

Miners Prolific.—The first berries were picked on June 8, and the last on June 27. I have fruited it on good, rich soil this season, where it matured nearly all of its heavy promise of fruit. The plants are very clean, healthy growers; the fruit is large, of a dark, rich color, excellent in flavor, and very pleasing to the eye. It is a perfect-flowering variety, and worthy of trial.

Kirkwood is a very desirable late variety. The plants thrive well on all soils, have perfect flowers, are very prolific bearers, with strong fruit stalks that keep the fruit clear from the ground. The berries are large, light in color, with a very distinct but pleasant flavor.

Gandy (Fig. 4) is the best late strawberry in cultivation, furnishing abundant pickings up to and after July 4. It is a staminate variety, a strong, vigorous, compact grower, productive of large, regular-sized, handsome berries, nearly round in shape, of a beautiful red color, and one of the best-flavored late berries in cultivation. It may be confidently recommended to all in search of a good late berry either for home use or for market.

THE USE OF APPLES FOR ANIMALS.

F. D. CURTIS, KIRBY HOMESTEAD, N. Y.

It is doubtful if as much food can be produced as cheaply and as valuable upon a given space of ground as when occupied by an apple tree. An orchard planted thirty-five feet apart will contain thirty-seven apple trees per acre. These trees, well grown, will produce five hundred bushels of apples. Apples have a food value, according to chemistry, says Prof. Sanborn, as follows:

	Protein.	*Fats.*	*Carbo-hydrates.*	*Fibre.*	*Total.*
Corn	8.58	4.08	64.92	1.30	78.88
Apples	.62	.37	13.78	1.34	16.11

Compared with corn at a cent a pound and apples at ten cents a bushel, one dollar would buy 78.88 pounds of digestible matter in corn and 80.55 pounds in apples. The corn has more fat, but it is not so well balanced a food as the apples. Experience teaches me that apples are a complete food; for, when a boy, it was my chore to feed the hogs, and my father used to winter a large number of swine on nothing but apples. These apples were of the common sorts, and there were always two large bins, one of the softer kinds and one of the harder. Of course the softer sorts were fed out first. These apples were shaken off from the trees, the ground underneath first having been cleared of all stones so they would not bruise more than necessary, were handled carefully, and then were put into the bins when perfectly dry. The badly bruised ones were left on the ground, to be eaten by the pigs. No one who has not fed swine in this way can estimate the value of apples for animal food. They are excellent for sheep, and all young stock as well, and good for cows, notwithstanding the common prejudice against them. This prejudice has arisen from the fact that when cattle eat too many of them at one time they are apt to produce colic arising from flatulency. Clover will do the same thing; yet no rational man will condemn clover as unfit for food. A few apples fed to a milch cow with her meal will promote digestion and assimilation. I would not at first give more than four quarts twice a day. This amount may be gradually increased to a peck, making half a bushel a day. The cow will give more and better milk for this extra food. They are fine food for colts, to be eaten with bran.

I am so impressed with the value of apples as a food for stock that I have set out three orchards of apple trees especially to produce food for animals. The trees are set twenty-five feet apart, with the intention, when the trees get so large as to be in each other's way, to cut down half of them. Before that time comes they will bear a large amount of food. A part of the trees in each orchard are of the very earliest sorts, and these are followed with varieties to keep up a continuous supply of ripe fruit till cold weather. There are a number of sweet kinds, such as Golden Sweet, Pumpkin Sweet, Bailey, and Jersey Sweet. One of these orchards is designed for a colt pasture; one for sheep, and one for swine. They are all utilized in this way now. I do not find that the colts injure the young trees; nor do the hogs. The sheep now and then will rub against and nibble one. This damage has not so far made it necessary to protect them. This could be done cheaply by putting a wire cloth around them, woven with lath, and kept in place with two stakes driven into the ground. When sheep have salt in a box all the time, and a good range, they will not be likely to damage trees. The damage is usually done by one or a very few sheep, and when this is the case the offending ones should be turned elsewhere. Hogs will not injure the trees if mulch is kept away from the body of the tree.

I do not intend to plow these orchards, but to feed the trees by topdressing the ground and spading about the trees. A smart man, with a sharp and light spade, will go over a large orchard in a day. A couple of such spadings is all the tillage these trees require. If the grass inclines to run out, the land should be harrowed, manure put on, and grass seed sown on. This easy sort of dressing, together with what the animals do, will keep the land in sod and push the trees on at a rapid rate. There is no doubt of it. If the farm has a rocky or uneven field here is the place for the permanent stock orchard. What a vast amount of food can be produced in this way, with so little outlay and trouble, and at the same time so many farms, spots, and fields unproductive or unsightly may be made profitable and attractive. In the Northwestern States, where fruit is scarce, the hardier varieties of apples would grow well and produce an abundance of excellent fruit. There is no reason why North Dakota and Northern Montana should not grow all the apples that might be profitably used by the people and their live-stock.

In one of our orchards we used a pick more than anything else to dig the holes. The ground was mostly slate rock. A hole was dug deeper than the tree required and earth put in and piled about the tree, with two or three channels leading from it to conduct the rains to the base of the tree to give it extra watering. These trees all lived, and sent their roots down into the crevices of the rocks to find plant food and moisture. A number of the trees in our orchards are of choice kinds, and we have faith that when the orchards come into full bearing we shall gather from these choice fruit beyond the requirements of the stock. The trees are to be kept pruned and cared for.

A great deal of valuable food goes to waste every year from lack of knowing its worth in the pomace at cider mills. This has a greater value than apples according to either bulk or weight. Prof. Sanborn also gives the nutritive value of pomace in one hundred pounds: Protein, 1.23; fats, 1.25; carbohydrates, 13.54; fiber, 3.74; total, 19.76. Apple pomace has a higher nutritive value than roots, and still a vast amount goes to waste everywhere, which could be turned to such good account. Apple pomace can be preserved in a silo or in a covered pit. It will lose some of its nutritive value by fermentation, but enough will be left to pay for all the trouble of saving it. Pigs can be well nurtured on pomace, and all kinds of animals will eat it. I do not commend it when fermented as a food for milch cows, although they will eat it well; nor as a full food, unless for hogs, and then it would be well to give them some more carbonaceous food with it, to wit, a few ears of corn. All animals fed on soft or succulent foods, such as pomace or silage, should be kept warm and, finally, all animals should, on whatever fed.

PAMPAS PLUMES.

NINETTA EAMES, CALIFORNIA.

In 1874 an enterprising florist in Santa Barbara sent samples of his pampas grass to a New York seed house, and soon after received an order from the firm for six hundred more to be immediately forwarded by express. This was the beginning of a limited industry in California which has made the fortunes of the pioneers in the business. Their success inspired others to set out pampas grass, and the past season there has been an excess of plumes over and above the demand. Not a few of the new plantations have been devoted to other products this spring, their owners fearing to trust to an increased market for a greater number of plumes than are grown by those who have made a business of it for some years. The price, too, has diminished greatly, the finest plumes selling at retail for thirty or forty dollars a thousand to Eastern and European purchasers, where they once brought two hundred dollars. The most extensive pampas grass plantation in California is located just outside of the picturesque little city of Santa Barbara. Here are five thousand "hills" of pampas forming noble hedges ten to sixteen feet apart, on rich valley soil in a high state of cultivation. The picture is certainly worth a long voyage to see. Above the giant tufts of reed-like grass thousands of towering, silvery feathers are airily tossed, ruffled and confusedly massed together by every recurring breeze. Some of these flowering stalks are eighteen to twenty feet in height. The pampas grass, *Gynerium argenteum*, is a native of South America, and was introduced into the United States in 1848. The plants are easily produced from the seed, but are usually multiplied by dividing the female plants, the plumes of which are greatly superior to those of the male. Before setting out the grass the ground should be plowed deep and thoroughly cultivated. There will be a crop of plumes the second year, numbering all the way from seventy-five to one hundred and fifty to a hill. After the third year the plumes decrease in number, but are larger and handsomer. At this stage it is advisable to trim or burn away the dead grass leaves in the hedges, which should be done before the plumes appear.

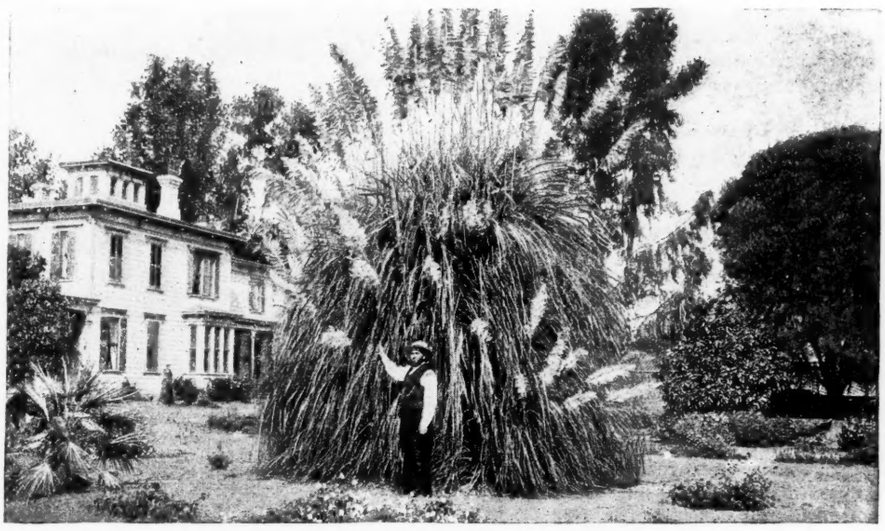


FIG. 1. SPECIMEN PLANT OF PAMPAS GRASS.

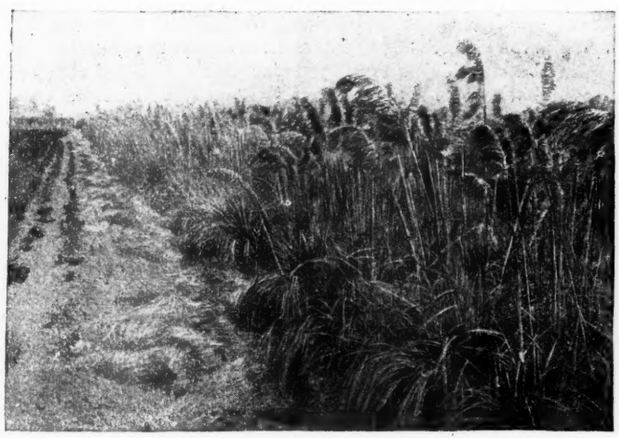


FIG. 2. PAMPAS GRASS FIELD.

An acre of pampas grass judiciously managed has been known to produce ten thousand plumes. The harvesting usually commences in September ere the seed begins to mature. If the gathering is delayed they ripen into a thistle down, which falls at the slightest movement. The plumes are cut and laid upon a sled which is drawn between the rows, for convenience. From the field they are first conveyed to the packing shed where they are stripped of the green sheath which closely envelopes them. Afterward in exposing them to the sun the male panicles hang heavily like oats, while the female plumes become light and fluffy. The latter alone are suitable for market. The plumes, which average from two and a half to three feet in length, are then spread upon the ground to dry, as seen in the engraving. Here they remain a couple of days before they are again transferred to the packing shed, where they are placed upon wide shelves and left until the stems are thoroughly dried. Then follows the work of packing for shipment. The plumes are graded and made into bales consisting of two or three thousand. These bales are then packed into boxes made for the purpose. If they are packed smoothly, there is no danger of injuring them in transportation. When they reach their destination it is only necessary to shake them gently over a stove, or in the sun to have them regain their original beauty. England and Germany send the largest orders for California pampas grass. It is used solely for decoration in these countries, as elsewhere.

[The accompanying illustrations, engraved after photographs by N. J. Reed, and T. N. Cook of Santa Barbara, present lifelike views of the pampas-plume industry. Fig. 1 depicts a specimen clump of pampas grass. In Fig. 2 is seen a pampas field with the growing crop, and in Fig. 3 the gathering of the plumes.]

FIG. 3. GATHERING THE PLUMES.

Milk as Human Food.—Milk is one of the most valuable and economical articles for human food. Estimated at twelve pounds per cow daily, the United States produce the bewildering amount of one hundred and fifty billions of pounds of milk per year. And as three pounds of milk are equivalent to one pound of beef in food elements, each inhabitant has in milk one and a half beeves annually. Whereas, in beef, each inhabitant has only four-fifths of one beef per capita. That, as a rule, our people not engaged in severe manual labor consume too much meat, there can be no doubt. Milk, then, will here prove an article of healthful nourishment, a lack of which predisposes to the harmful use of spirits, in the form of beer, wine, rum, or whisky.

FIXATION OF FREE NITROGEN.

J. J. WILLIS, SUPERINTENDENT OF SIR J. B. LAWES'S EXPERIMENTS, ROTHAMSTED, ENGLAND.

The subject of nitrogen in its relation to vegetation has occupied the attention of agricultural chemists, more or less, for the last one hundred years, for it was between 1770 and 1800 that Black, Scheele, Lavoisier, Cavendish, and Watt were engaged in establishing the fact that common air consists of nitrogen and oxygen, with a little carbonic acid; that carbonic acid is composed of carbon and oxygen, and water of hydrogen and oxygen; and it was within the same period that Priestley, Ingenhouse, and others, labored to show the mutual relations of these bodies and vegetable growth. To De Saussure we owe the quantitative illustration of the fact that plants in sunlight accumulate carbon, hydrogen, and oxygen at the expense of carbonic acid and water. And from his numerous experiments he was led to the conclusion that air and water contributed a much larger proportion of the dry substance of plants than did the soils in which they grew; also that the source of the nitrogen of plants was very probably the nitrogenous compounds to be found in the soil, together with the small amount of ammonia which he demonstrated to exist in the atmosphere.

With regard to the fixation of free nitrogen, it is just about half a century since Boussingault commenced experiments to determine whether plants did assimilate free nitrogen from the air, and from his results he concluded that they did not. About thirty years ago a series of experiments on the same subject were commenced by Sir J. B. Lawes and Dr. Gilbert, at Rothamsted, the results of which confirmed those of Boussingault, although others have come to an opposite conclusion. During the last few years, however, the discussion has assumed a somewhat different aspect. The question still is whether the free nitrogen of the air is an important source of the nitrogen of vegetation; but while few now assume that chlorophyllous plants directly assimilate free nitrogen, it is, nevertheless, supposed to be brought under contribution in various ways; coming into combination by the agency of electricity within the soil or within the plant, or under the influence of microorganisms or of other low forms, either within the soil itself or in symbiotic growth with a higher plant. But of all the recent results bearing upon the subject those of Hellriegel and Wilfarth, with certain leguminous plants, are by far the most definite and significant. Accordingly it was decided to make experiments at Rothamsted on somewhat similar lines. A preliminary series was undertaken in 1888, a more extended one in 1889. The subject was further investigated in 1890, and is being continued during the present year, 1891.

Although it can hardly be said that there remained an unsolved problem in regard to the source of the nitrogen of our non-leguminous crops, yet it is admitted that, in spite of all the investigations and discussions of the last fifty years, the source of the whole of the nitrogen of our leguminous crops has not been satisfactorily explained. According to some recent experimenters, however, gain from the fixation of free nitrogen is not limited to our leguminous crops. But quite accordantly, not only with common experience in agriculture but with the direct experimental results of Sir J. B. Lawes and Dr. Gilbert, Hellriegel found in his experiments that plants of the gramineous, the chenopodiaceous, the polygonous, and the cruciferous families depended on combined nitrogen supplied within the soil. On the other hand he found that leguminous plants did not depend entirely on such supplies. His results were not only very definite but they had a special bearing on the admittedly unsolved problem of the source of the whole of the nitrogen of the Leguminosæ.

HOW IS THE FIXATION OF NITROGEN TO BE EXPLAINED.

Reviewing the whole of the results which have been obtained at Rothamsted there can be no doubt that they are abundantly confirmatory of those obtained by Hellriegel and Wilfarth, and that the fact of the fixation of free nitrogen in the growth of leguminosæ under the influence of suitable microbe infection of the soil, and of the resulting nodule formation on the roots, may be considered as fully established. It is a point of importance that it should be established, as it appears to be, that in the development of the parasite the cortex of the root of the host is penetrated, and so an intimate connection between the two—in fact, a symbiosis—is set up. Then there is abundant evidence that the nodules are very rich in nitrogen. So far as the results at command go, it would seem that in certain stages of their development their dry substance may contain a much higher percentage of nitrogen than that of any part of the growing plant itself; and in some cases even higher than in that of the highly nitrogenous leguminous seed.

Whether or not it may eventually be established that nitrogen is fixed by microbes within the soil independently of leguminous growth, there is evidence that in soils and subsoils containing organic nitrogen lower organisms may serve the higher plants by taking up or attacking and bringing into a more readily available condition combined nitrogen, not otherwise or only very slowly available for the higher plants. For example, it is probable that fungi generally derive nitrogen from organic nitrogen, and in the case of those of Fairy Rings there can be little doubt that they take up from the soil organic nitrogen which is not available to the meadow plants, and that on their decay their nitrogen becomes available to the associated herbage. Then in the case of the fungus mantle observed by Frank on the roots of certain trees it may be supposed that the fungus takes up organic nitrogen, and so becomes the medium of the supply of the soil nitrogen to the plant. More pertinent still is the action of the nitrifying organisms in rendering the organic nitrogen of the soil and subsoil available to the higher plants. It may well be supposed, therefore, that there may be other cases in which lower organisms may serve the higher by bringing into a more available condition the combined nitrogen already existing but in a comparatively inert state in our soils and subsoils.

As to the undoubted fixation of free nitrogen in the growth of leguminous crops under the influence of suitable microbe infection, and of the development of nodules on the roots of the plants, the alternative explanations seem to be:

1. That the plant is enabled, under the conditions of the symbiosis, to fix the free nitrogen of the atmosphere by its leaves.
2. That the organisms become distributed within the soil and there fix free nitrogen, the resulting nitrogenous compounds becoming available as a source of nitrogen to the roots of the higher plant.
3. That free nitrogen is fixed in the course of the development of the organisms within the nodules, and that the resulting nitrogenous compounds are absorbed and utilized by the host. Dr. Gilbert is of opinion that the balance of the evidence at present at command is much in favor of the third mode of explanation.

PRACTICAL IMPORTANCE OF THE QUESTION.

In regard to the practical importance of this newly-established source of nitrogen to the Leguminosæ, considered in its bearing on the known facts of agricultural production, and especially on the question of the sources of the nitrogen not only of leguminous crops themselves but of crops generally, it may be stated that while it is true that both agricultural investigation and direct vegetation experiment have clearly shown that Leguminosæ do take up much soil nitrogen, and in great part as nitrate, yet it is admitted that in some cases there is no evidence to justify the conclusion that the whole of the nitrogen had been so derived, and hence that some other explanation of the large amounts assimilated was needed.

While the balance of experimental evidence is against the supposition that the higher plants growing under sterilized conditions can assimilate free nitrogen, yet it is now established that at any rate in the case of some leguminous plants they may acquire nitrogen coincidently with the development on their roots of tubercular bodies with bacteroid contents, and the evidence points to the conclusion that it is the lower organisms, and not the higher plants that fix free nitrogen.

SUMMARY AND CONCLUSION.

There is no evidence that the leguminous plant itself assimilates free nitrogen. The results at present at command are in favor of the supposition that the observed gain is due to the fixation of nitrogen in the development of the lower organisms in the root nodules, and that the nitrogenous compounds produced are taken up and utilized by the leguminous plant. Further, the development of the supposed nitrogen fixing bodies is obviously dependent on due infection with organisms essential to the setting up of the symbiotic life in the particular leguminous plant to be grown. It seems probable that in the growth in practical agriculture of leguminous crops, such as clover, vetches, peas, beans, lucern, etc., at any rate some of the large amount of nitrogen which they contain and of the large amount which they frequently leave as nitrogenous residue in the soil for future crops may be due to free nitrogen so brought into combination by the agency of lower organisms. It has yet to be determined under what conditions a greater or less proportion of the total nitrogen of the crop will be derived on the one hand from nitrogen compounds within the soil and on the other from such fixatids.

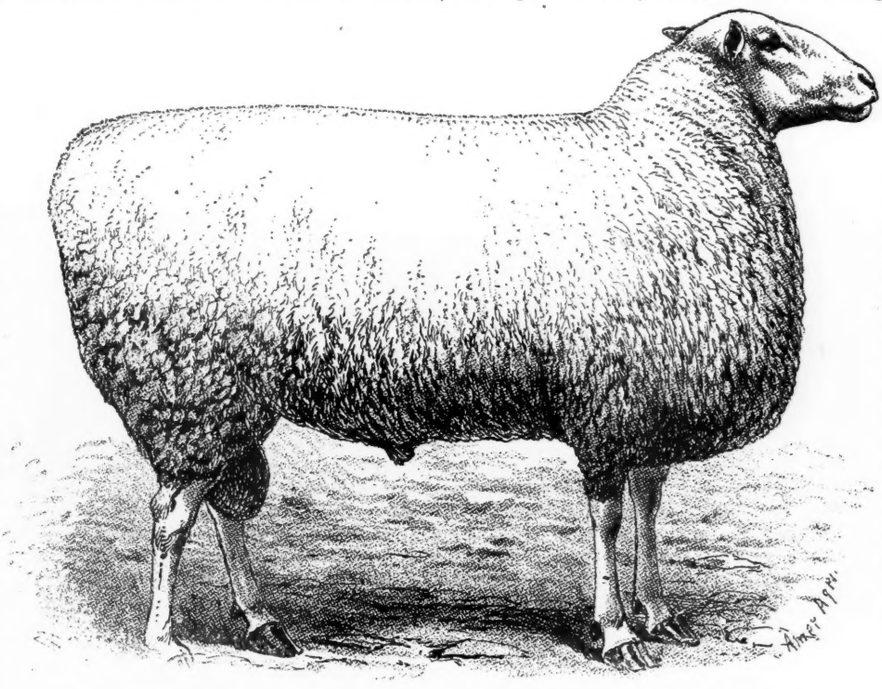
Incidentally the question suggests itself how far the failure of

clover or of other leguminous crops may be due to the exhaustion of the organisms necessary for nodule formation and for the consequent fixation of free nitrogen, and how far to the exhaustion of combined nitrogen in an available condition, or of the necessary mineral constituents within the range of the roots. Assuming it to be established that a considerable proportion of the nitrogen of our leguminous crop is due to fixation under the conditions supposed, it is obvious that such a fact will not only serve to explain the source of the hitherto unaccounted for amount of the nitrogen of those crops themselves, but it will also aid the explanation of the source of the increased amount of nitrogen which other crops acquire when they are grown in association or in alternation with Leguminosæ. Lastly, it will help to explain the source of part of the accumulated combined nitrogen within our soils, and the comparatively slow exhaustion of their stores of it by cropping, drainage, and in other ways.

BORDER LEICESTER SHEEP.

I. SCOTT, SCOTLAND.

One of the best of the British long-wooled breeds of sheep is the Border Leicester. It was originated by crossing the true Leicester with the Cheviot, but it has long been recognized as a pure and well-established breed. As both the name and the Cheviot blood indicate, its habitat is along the border line between England and Scotland. They combine in a large degree the hardiness of the Cheviot with the early maturity, heavy carcass and long, lustrous wool of the Leicester. The points which indicate purity of blood are as follows: Head—long and fine, with a fair breadth between the eyes, well covered with fine white hair; open nostrils; bright and full eyes; thin ears, well covered with fine hair; strong underjaw; nose black. Symmetry — equal weight of quarters; straight and broad back; shoulders broad and deep, with short springing neck; head well set on, with fine carriage; well-sprung ribs, with straight under lines; breast wide and well down; full bosom; hindquarters long, with rump round and coming well over; tail nicely set on, at right angles with back; clean red skin; legs well set at corners; flat clean hind bones; fine in forelegs below knee; neat feet and clean pasterns. Wool—uniform quality, fine, firm hair, medium close set, pearl-bright color, deep in arm, close up at ears, and well on to jaws, hip wool strong but not coarse, belly well clad and on to thigh edge.



THE BORDER LEICESTER RAM "THE GRAND DUKE."

The Border Leicester ram in the illustration is a well-known sheep, "The Grand Duke," from the flock of Miss Stark, Mellendean, near Kolso. Lord Polwarth's flock of Border Leicester is the most famous perhaps of any breed. Since 1802, it has been entirely a self-supporting flock; but by judicious watering and change of soil the constitution of the flock has been kept up, while the close consanguinity has imparted to the rams an impressiveness and potency as sires which have secured for them an unparalleled reputation. At the annual ram sale the prices of Lord Polwarth's sheep far exceed any others. His prices for the last eighteen years have averaged about £32 ($160), though the average has some years been somewhat over £44 ($220), while individual rams have sold at from £150 to £195 ($750 to $975). For many years no sheep have been exhibited at shows by Lord Polwarth, but most of the prize Border Leicesters have either been purchased direct from him, or traced direct to purchases from his flock.

FALL PASTURING OF MEADOWS.

S. C. BRIDGE, MAINE.

It is a common practice in many parts of the country to turn the cattle, horses and sheep upon the hay fields after the crop of hay has been gathered, and the second crop, or "rowen," has appeared in luxuriant growth. There is a strong temptation to such a course, because at this season of the year the pastures have begun to dry up, and the stock has begun to look less thrifty, while the yield of milk from the cows has very materially diminished. But like all temptations to do unwise things for the sake of temporary advantage, this one should be resisted. It is to be presumed that the great majority who practice fall feeding of meadow lands do not comprehend the extent of the injury that comes from such a course. They see only a little increase of growth, a few more quarts of milk per day, but fail to reason back from effect to cause when succeeding seasons show a rapidly decreasing yield of hay, or other crops, upon these fields, some considerable part of which is surely due to this fall pasturing.

Most plants require for vigorous growth a soil, not hard packed, but fairly light and well drained, with roots left undisturbed when once they have begun to stretch out through the soil in search of food. Moreover, it is the habit of grass plants to form a thick mat or carpet over the ground, which serves as protection for the roots against the washing of heavy rains, the alternate thawing and freezing of early spring, and the scorching heat of late summer. When meadows are cropped by cattle, many plants are torn outright from the soil, the roots of others broken or loosened and exposed to frost, rain and heat. In addition to this, the feet of the stock are constantly packing the soil solidly around the plants, which hinders free drainage; or making foot holes that become basins for water and ice. But the actual injury to the grass plants is not all—by feeding off the second growth Nature's plans for protecting the grass during the cold of winter are thwarted, and very much of "winter killing" is the result. Where snows lie deep and continuous, this difficulty is not so apparent, but even cold climates are subject to "open" winters, which are sufficiently trying to grass lands, even when well protected.

LONK SHEEP.

RICHARD WAUGH, MANITOBA.

The Lonk is one of the varieties of sheep that have existed from time immemorial in all the mountainous regions of Asia and Europe, and is confined almost entirely to the higher ranges of the Cumberland, Westmoreland, and Yorkshire hills in England. The Rocky Mountain sheep is the American representative of the same group. All of them have horns on the male; those of the female are less developed in nature. The natural Lonk is of little commercial importance, but is annually shown at the Royal Society's Shows, more as a curiosity than anything else. As selection and improved breeding came into play the horns were bred off and the wool became less hairy, till the modern breed became fixed in type.

How to Improve Salt Meadows.—Drain the salt meadows into the nearest creek or ditch which the tides have dug. The water thus drawn off only carries a small portion of the top soil with it into the creek or ditch, from which it can be easily removed to the manure

heap. In this way all along our low-lying sea-coasts the salt meadows may be kept in paying condition at trifling expense, and the creeks kept open. Besides, thousands of loads of good manure can be harvested that will be worth more than many successive crops. Otherwise the tides sweep off at every ebb, of every tide that covers the surface of the meadows the fine, rich soil that would otherwise remain to enrich the salt grasses.

RAISING TURKEYS FOR MARKET.

MISS H. C. DUDLEY, KENTUCKY.

Raising turkeys is one branch of farm industry that has paid extremely well during the last few years. The average price for good New England turkeys in the last twenty years is said to exceed eighteen cents a pound, and may probably reach twenty cents. Last year they had quick sale at Thanksgiving for twenty cents a pound, at Christmas for twenty-one to twenty-two cents, and at the close of the season would have brought twenty-five cents. While the fact that the price paid for dressed fowls, as well as for pure-bred breeding stock, is quite as high, if not higher than it ever has been, furnishes incontestible proof that the demand is still greater than the supply. One reason of this is that the business of raising turkeys cannot be satisfactorily carried on anywhere except on the farm, a wide range being absolutely necessary for the health and even for the life of both old and young. But most farmers are somehow slow to take hold of the work, they think the profits too small to make it worth their while, though in reality there is nothing they can raise which brings in so large a return for the labor. I know of one flock last year the proceeds of which amounted to $150, and this too, when on account of poor market facilities many of the late young turkeys brought only seven cents per pound gross, the real profits being from the sale of eggs, for the turkeys were pure-bred. Another reason, perhaps, why so few farmers make turkeys a specialty is because they imagine a great amount of time and skill is necessary to raise them. In reality they require less attention than almost any other fowl, taking their value into consideration. To make the business a success, however, the attendant must understand their habits and disposition; must be prompt and thoughtful, exercising good judgment and untiring zeal in their management. Turkeys possess more intelligence than they are usually credited with, are susceptible of being trained so as to become regular in their habits, and can then be depended upon with tolerable certainty. The variety called the dark bronze is considered the largest and finest, as well as the handsomest and most robust. The bronze is directly descended from the American wild turkey, and, as fast as it becomes domesticated and therefore less hardy, a fresh strain of the wild bird is added.

Turkeys are sometimes hatched and reared by ordinary hens, and will then stay closer around the house and yard, but such broods are never quite so large and fine as those that travel far and wide, subsisting to a greater extent upon such insects and fresh tender verdure as is their natural food. To insure healthy, thrifty poults, the parent stock must be large, strong, and vigorous, not too fat, and not in-bred. If possible, let them be between two and five years old, never younger, and only in case of very fine birds a little older. Winter the hens on a variety of wholesome food, not fattening in character, care being taken to keep them as tame as possible, so as to be able to secure the eggs and to care for the little ones while hatching. The best food for the poults is a sort of custard made of eggs, sweet milk, and stale bread, which should be fed five times a day for the first two weeks; after which, egg-bread scalded in sweet milk may be given three times a day as long as the broods remain within reach at midday, but when they are old enough to stay out in the fields from morning till evening, then two good meals a day are sufficient. When the weather is warm, and the young turkeys come to the house, tired and panting from the heat and the home run, for the little fellows are quite as anxious to get home at night as they were to go out in the morning, they enjoy nothing better than a wide panful of cool buttermilk, or clabber. Indeed, I have had to give my brood their food before letting them see the milk, else they would not touch the food at all. But after eating, I give them all the clabber they want, as there is no danger then of its hurting them. Good milk, not very sour, or old and rancid, is very wholesome, promoting rapid growth and development, besides being very fattening in its tendency, and rendering the flesh white, tender, and juicy, and of a delicious flavor. Turkey chicks are exceedingly delicate, and must be kept from exposure to dew and rain. At eight weeks old they become poults, and on a good range are fully capable of taking care of themselves. Still if one wishes unusually fine large birds, either as superior breeding stock or to fatten for early market, it will be well never to give them less than two good meals a day, of suitable nutritious food. A good supper is a great inducement for their return home at night, and fowls that go to roost with full crops grow fast. One thing be very careful about, never allow the flock to roost from home a single night; there is no end to the dangers that beset them. I have known the entire profits of a season's work to be lost during one night spent from home.

Early broods are most profitable; the poults are healthier and stronger, and therefore thrifty and easily raised. If intended for market at Thanksgiving, begin feeding liberally with whole grain in September, corn, wheat, and oats in equal proportions, though after the first of November it would be well to give corn only, with plenty of milk, some cooked vegetable now and then, and a little fresh meat for a change. Should the flock be large, do not try to market them all at once; get the early broods ready for Thanksgiving, the next for Christmas, and the late poults for January and February. The early hatch is also in greatest demand when the stock is pure-bred and intended for breeding purposes; and if so managed as to attain good weights in the fall, say from fifteen to twenty pounds respectively, females and males, they usually sell readily—that is, when judiciously advertised. The keeper is thus saved the trouble and expense of wintering and caring for his flock until the regular season, February and March, by which time, purchasers, of course, demand greater weights, say from eighteen to thirty pounds, or as much above these figures as can be obtained.

FACTS ABOUT FOWLS.

JNO. M. CAUGHEY, PENNSYLVANIA.

There are probably more Leghorn, Plymouth Rock, and Light Brahma fowls bred throughout the United States than of any other three breeds, and possibly of all breeds. The Leghorns will rank first in number, the Plymouth Rocks and Light Brahmas following very closely.

Upon the attention given to growing chicks during hot days will determine largely the success at the close of the summer season. In hot weather young growing chicks suffer from heat, and need certain foods that do not produce fat, but more that bring bone and muscle.

Eggs when they command only eight cents per dozen in the market should be carefully packed in salt and stored away for higher prices. This method will keep eggs nicely, and by October they will bring at least twenty cents per dozen. Certainly the margin of profit at this figure is ample.

Many who have failed to make a success in other pursuits in life go at poultry-keeping with the idea that it is profitable and easy, with little or no labor. They learn after a time what it means to hatch and rear one thousand chicks. One or two years' experience dispels their first idea, and they are glad to quit.

Ducks are not as good field foragers as chickens or turkeys; their short legs and flat, web feet retard their movements. On a pond or other water they make up for their awkwardness on land, and go through much exercise that is good for them. The duck is exempt from many prevailing diseases to which other poultry are subject. They are usually excellent layers, the Pekin duck leading all in this respect.

Poultry is to some extent raised in Cuba. In the streets of Havana may be seen some of the worst looking specimens of poultry one could imagine, living, as the most of them do, on the refuse matter about the marketplaces. There is a lack of the bright red comb and healthy, cleanly appearance of farm-raised stock. On a few of the plantations may be found some of our leading breeds. There is a field for this industry, rightly managed, in this section of country.

We have yet to know of a farmer or poultryman who has taken up the breeding of swans, fowls of great value, and not so difficult to rear with the same amount of care and attention that is given to poultry. Most of the large public parks, such as Central Park, New York, Fairmount Park, Philadelphia, Allegheny Park, Allegheny, Pa., Lincoln Park, Chicago, and many others, keep and rear fresh stock annually. Live breeding pairs cost from $75 to $100. At such prices it looks reasonable to believe them to be profitable. Eggs cannot be obtained but the birds can from the superintendent of any of the above-mentioned parks. Would it not pay to try a few as to their value as farm fowls.

THE MUSCOVY DUCK.

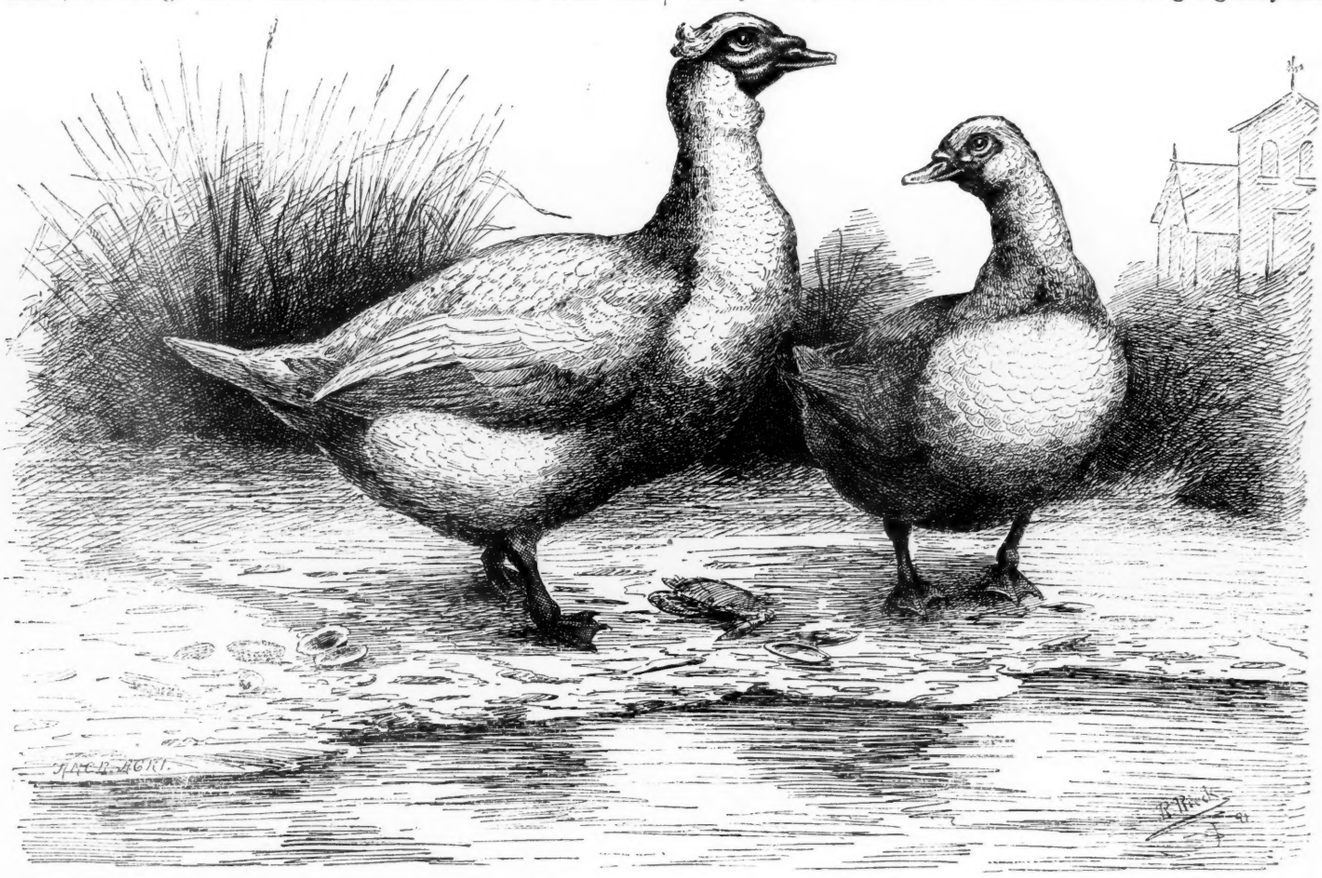
H. S. BABCOCK.

Throughout New England and the greater part of the Northern States the Muscovy Duck is rarely seen, duck raisers keeping chiefly Pekins, Cayugas, and Rouens; but as one travels southward he finds that a larger percentage of the ducks are Muscovies, and in some Southern States comparatively few of the other breeds are kept. Whether the Muscovy is better suited for a warmer climate or whether this is one of the unaccountable fashions in domestic poultry does not appear, but as the duck is a native of the warmer parts of South America it is not unreasonable to suppose that it thrives better in the South than elsewhere and for that reason is popular there. The name, Muscovy, is believed to be a corruption of the word Musk, and that the duck was so called from the musky odor which pervades the skin but which is dissipated by cooking. The supposition, though perhaps unprovable, is certainly reasonable and for want of a better explanation this may be adopted.

The Muscovy is a distinct species from the other domestic ducks, and though under certain circumstances it will cross with them the progeny is sterile, certainly when bred *inter se*, though it is possible that when bred back to the parent breed some of the individuals might prove fertile. It differs from ordinary domestic ducks in many ways. There is a very great disparity in the size of the sexes, the drakes sometimes weighing ten, eleven, and even twelve pounds, while the ducks seldom weigh more than six. In Pekins, Cayugas, Aylesburys, and Rouens, the drake is usually somewhat heavier than the duck, but there is no such inequality as exists in the Muscovy. The drakes, as a distinctive sexual badge, in the ordinary domestic ducks have curled feathers in the tail, but these are wanting in the Muscovy. The former squat upon the ground and build their nests there, but the Muscovy has great powers of flight, often perches in trees and sometimes builds its nest in their branches. And, in addition to all of the above, is the naked face, carunculated with scarlet, giving the fowl a widely different appearance from that of the other breeds of ducks.

Muscovy ducks are nearly or quite solid black, a rich green-lustred black, black and white, the colors appearing in large patches, and pure white. The black and white ones are now frequently called Brazilian Ducks, a name which seems warranted from the fact that the Muscovy is extensively bred in that country. The *American Standard* recognizes but two varieties, the colored and the white, describing as colored the nearly solid black variety. It would seem that it would be a better classification to recognize three varieties, black, colored, and white, and thus do away with the term Brazilian. Of the three varieties there is none that is prettier than the white. White fowls of all kinds, when kept clean, are always attractive, and a duck if it has access to the water will keep itself clean.

Mr. Lewis Wright, the poultry author, is inclined to deny to the Muscovy duck a practical character. He says: "The flesh of the Musk duck is very good when eaten young, but it does not lay nearly so many eggs as the common kinds. They are also awkward birds to keep, the temper of the drake being simply abominable. He persecutes every creature he can manage, and has been known to attack children; as to other ducks, he is fond of seizing them by the neck and holding them under the water till they are drowned, if in any way they 'raise his dander.' * * * For these and other reasons, the Musk duck can hardly be called a profitable variety." We are inclined to think that Mr. Wright greatly but probably unintentionally exaggerates the unpleasant disposition of the Muscovy drake, for I have seen a flock of them that ran with Plymouth Rock and Langshan fowls and white turkeys, and the whole apparently lived together as peaceably as such a mixed lot could be expected to. I have known a Rouen drake that had a strong penchant for young chickens and gobbled them up quite rapidly, and the Rouen is as sweet-tempered as any breed. It is very certain that our Southern brethren find no serious difficulty with Muscovies, for if they did they would not be so popular among them, and even Mr. Wright states that in Brazil the Muscovy "is extensively domesticated, and is indeed the duck of the country," which at least tends to prove that they are not so very "awkward birds to keep." Their table qualities are certainly excellent, and while they may not lay quite so many eggs as the Pekin they begin to lay quite early in the season and lay enough eggs to make their keeping profitable, if, as they should be, the eggs are hatched into young ducks. And so, it seems to me, it is scarcely doing the Muscovy duck justice to say that it "can hardly be called a profitable variety." It is only fair, however, to state that it is quite possible in another country, under changed environment, the Muscovy duck



PRIZE PAIR OF MUSCOVY DUCKS.

may be quite a different fowl from what it is here, and that in England, where Mr. Wright's observations were made, it may be more quarrelsome and less prolific than it is in the United States, and especially in the Southern portion thereof, where a genial climate may temper the disposition and stimulate the productivity of the Muscovy duck. At any rate it is certain that with many of our people the Muscovy is a popular waterfowl, and that they find no insuperable difficulty in keeping it.

The white variety, which was selected for illustration, exhibits the general characteristics of the breed, and from a study of the engraving which accompanies this article, and which was made from a prize pair of these waterfowl, the reader can gain a very clear idea of the appearance of the Muscovy duck.

AN AUSTRALIAN CODLIN MOTH TRAP.

Dr. Benjamin A. Field, of Hobart, Tasmania, sends us the following description of a codlin moth trap bandage from which he hopes great results. "I take," he writes, "a strip of sacking about eight inches wide, and with a gun-wad punch make a row of holes along its center. Then a strip of cheesecloth about three inches wide is closely sewn with a machine along each side of the row of holes,

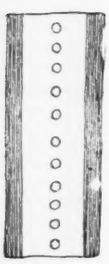


FIG. 1.

FIG. 2.

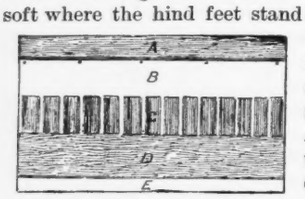
FIG. 3.

Fig. 1, being tucked as it is sewn on so as to form a cage. Now about an inch of each edge of the sacking is turned down, Fig. 2, and it is pressed through the clothes mangle, making a bandage. The grub goes up under the turned-in edge, then after hatching, if it attempts to return the same way, it gets caught in the *cul de sac*. Finding it easier to go up and out through the punched holes, it takes that course and is caught in the cheesecloth cage, Fig. 3, A, which, being secured at the two ends by tacks, holds him in." For other insect pests, like oyster scale, etc., Dr. Field is trying injections of various drugs into the circulation of the tree, and so far has obtained the best results from *Eucalyptus globulus* (blue-gum) oil.

AN IMPROVED STABLE FLOOR.

A large number of farmers on the Western prairies accept the free services of mother earth as flooring for their stables. They thus secure a floor made by the same hand that created the hoof, and one that meets the latter on a more friendly footing than hard plank. There are no cracks here for the cold air to work up through; no weak places for a heavy foot to break down, but a solid, seamless bed, and a warm one, too, when covered with plenty of straw.

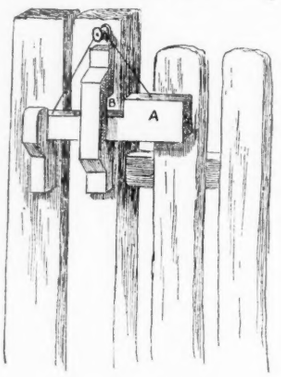
These floors are quite faulty, however, in their crude condition. There are no gutters behind the animals, and the earth becomes soft where the hind feet stand and wear away, resulting in filthy mud-holes. A remedy for this fault is recommended by Charles L. Hill, of Freeborn Co., Minnesota, who sends us the accompanying sketch: A represents an earth walk behind the gutter; B, the gutter; C, pieces of two-by-four inch scantling bedded into the earth, even with the earth floor, D; E, place for manger or feed trough. The rear ends of the scantling, C, rest on a two-by-four inch scantling set edgewise. The walk, A, is kept from caving into the gutter by a piece two-by-six inches set on edge and held in place by short stakes. The pieces, C, should be from two to three feet in length and slope a little backward. They should be set about an inch apart, and the spaces kept cleaned out for drainage purpose. The hind feet have to rest on wood, but the fore feet, which sustain the greater weight, have their floor of earth. Instead of sawn timber, all the pieces may be cut from poles or sticks from the wood-pile. The plan with slight change is good for either cattle or horses. The expense is trifling, and thousands of Western stables could be greatly improved by the introduction of this method.



SERVICEABLE STABLE FLOOR.

A SECURE LOCKING GATE LATCH.

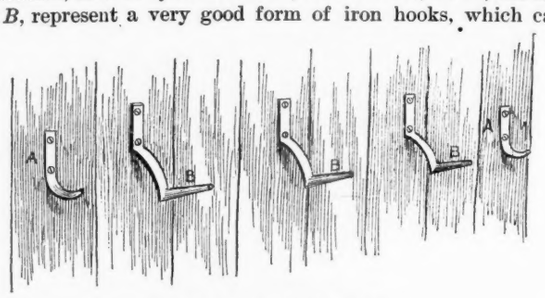
An Illinois subscriber sends us this description of a gate latch with a lock therefor. The latch is by no means new, but, though simply made and very convenient has not been much used because animals soon learn to lift the latch with their noses. This subscriber locks it by means of the block A, which fits closely into the mortise B. With the blocks so placed the latch cannot be raised, and the animals cannot move the block. For greater convenience a stout cord is fastened to each end of the latch, and passes over a pulley above as the block is drawn from the mortise, bringing it a little farther raises the latch. A large spool will answer for a pulley, as shown in the illustration. Another gate fastener commonly used in the Western States is merely a piece of one-quarter or one-half inch iron rod about a foot long, which is inserted in a hole bored for the purpose through the gate-post and adjoining the end piece of the gate. It is simply withdrawn like an ordinary wooden pin when the gate is to be opened, and pushed through when it is to be closed. Cows and horses rarely learn to withdraw this pin since the weight of the gate rests more or less heavily, holding it firmly in place until the gate is slightly raised.



SECURE LATCH.

CONVENIENT HARNESS HOOK.

By far too many farmers, instead of hanging up the harness and collars after being used, throw them upon the floor, across the wagon seat, upon benches, and if in the stable the chances are that they are temporarily thrown across the division between the stalls. All of this careless and shiftless way of doing business is easily avoided by having plenty of strong iron or wooden hooks placed in some convenient part of the wagon house. Always avoid hanging harness in the horse stable, as the tainted atmosphere destroys the grain of the leather, tarnishes the plated portions and makes the whole sticky and disagreeable to handle. In the accompanying illustration, sent us by L. D. Sncok, of Yates Co., N. Y., the figures *B B B*, represent a very good form of iron hooks, which can be



HOMEMADE HARNESS HOOKS.

easily made from strips of worn wagon tires. Place the rounded side up and screw them to the side of the building, or to a girt. The plain hooks, *A A*, are of either wood or iron and intended for the collars, as it is not best to hang the collars on the same hook with the bridle and harness, unless the hook be of extra length.

Indirect Fertilizers.—There are substances that in themselves do not furnish the plant any needed ingredient for growth, but when applied to the soil assist materially in augmenting the crop. One of the best illustrations of this class of fertilizers is common salt. Lime is another substance rarely lacking in the soil, but when added assists in setting free other substances that are much needed by the growing plants, that otherwise would not have become available for the crop. Water is added in irrigation not as a fertilizer but because it is the great solvent in nature and the vehicle of transfer of the various substances that go to build up a plant when entering it from the soil water.

PENNSYLVANIA FARM FENCES.

DR. GEORGE G. GROFF.

The fence, which until recently has been most common on the farms of Pennsylvania, is the "Worm," or "Stake and Rider" fence. It differs from the Virginia "Worm" or "Zig-zag" fence in that the former is held firmly in place by the "stakes and riders" which are lacking in the latter. The Virginia fence is built ten or more rails high, while in Pennsylvania seldom more than seven or eight rails are used to a panel. The beginning of such a fence is shown in Fig. 1. The rails—chestnut is preferred—are cut eleven feet long. The bed of the fence is made about five feet wide. A large flat stone or block of wood is placed under each corner to keep the bottom rail off the ground. When five rails have been laid, the stakes are set, commencing at that end of the fence where the first rail was laid. In setting the stakes the stake in each inside corner should go ahead; that is, be placed nearest that end of the fence toward which the workmen are progressing. When the first pair

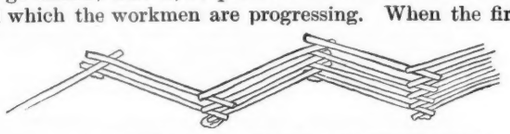


FIG. 1. BEGINNING OF A STAKE AND RIDER FENCE.

of stakes have been planted the "underrider" is placed in position, one end on these stakes and the other end on the corner where the next stakes are to be set, so that one end is above one pair of stakes and under the next pair. Thus, two stakes are planted, then a rider placed in them until the work of setting the stakes is completed. Then the workmen go back to the starting point and put on the "top-riders." These are generally the heaviest and roughest rails of all, and serve to keep the stakes in place and to hold down the fence. The completed fence is seen in Fig. 2. Two men are required to build this fence with ease and speed. The objections to this fence are that it takes up a great deal of ground; it harbors weeds and briers; it is easily blown over, and it is unsightly. The advantages are that where timber is abundant it is cheap, and common labor can build it. Though it needs to be frequently rebuilt, the rails last a long time.

The "Post and Rail" fence, shown in Fig. 3, is very common.

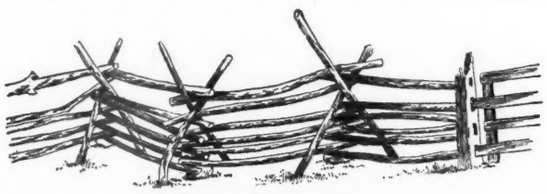


FIG. 2. STAKE AND RIDER FENCE COMPLETED.

Where the worm fence was almost universal it was considered proper that the "line" fences should always be of posts and rails. Fences along public roads and line fences were made five and even six rails high, while division fences contained but four and sometimes only three rails. When made of chestnut timber, this fence needs to be rebuilt about every ten or twelve years, as the posts rot off in that time. The rails last a second term of twelve years, when they, too, are mostly decayed. If locust posts are used, this fence will keep in good repair an average lifetime.

The board fence, made by nailing boards to posts, has only come into use in this State in a very few localities. The "Swede fence," depicted in Fig 4, possibly is peculiar to Pennsylvania and Delaware, doubtless being derived from the early Swedish settlers along the Delaware river. It is a fence quickly made, and into it

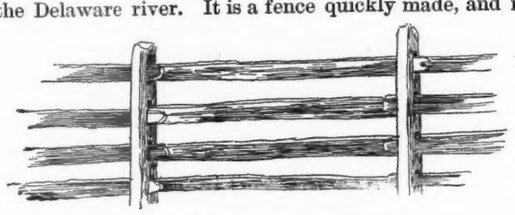


FIG. 3. POST AND RAIL FENCE.

poorer material can be worked than into almost any other fence, yet it is quite effective in turning cattle. It has been generally employed where a temporary fence is needed, as along streams which flood their banks, or to inclose a transient crop. Recently, riding in the cars along the Juniata river, I saw a great deal of this fence. The Swede fence is made of rails and stakes, and the only tool needed in its erection is an ax to sharpen the stakes and to drive them into the ground. Two stakes, four to five feet long, are driven into the ground crossing each other, say three feet from the ground. Into the crotch thus formed a rail is laid, one end resting upon the ground. Some three or four feet in advance of

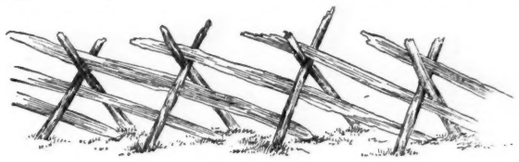


FIG. 4. TYPICAL SWEDE FENCE.

the first pair of stakes a second pair is driven and a rail pushed under the first pair, but resting upon the second, and so the work progresses until completed. One man can build this fence, working alone. In newly-cleared regions, especially where the timber was hemlock or pine, "stump" fences are largely used. Fig. 5 shows a section of one. Strange as it may seem, stumps in a single row take up but little room, form very lasting and very effective fences, besides being decidedly picturesque.

In parts of the State where stones are abundant, stone fences are common, as seen in Fig. 6. These exhibit every degree of excellence. Some are mere rows of stone heaps, while others are skillfully made. Near towns and cities many of the old stone walls have been sold for building stone and removed. With a varied

FIG. 5. STUMP FENCE.

assortment of trees and bushes growing along them, these old stone walls were a picturesque and interesting feature of many a rural landscape.

To a limited extent, within the borders of this State, along the tide waters of the Delaware river and its tributaries, ditches take the place of fences.

At one time hedges of various plants seem to have been quite extensively planted in the southeastern counties of the State. In the earlier days various species of the hawthorn were used, as also the honey locust (*Gleditschia*), the privet, the osage orange and the Japan quince. But all these have generally been abandoned as failures. For ornamental hedges about buildings, the following plants are in use, viz: the Japan quince, with beautiful white or red flowers; the privet, with white flowers; the bush honeysuckles, lilacs, althæa, berberry and purple beech; of evergreens, the

FIG. 6. STONE FENCE.

Norway fir, the hemlock and the arbor vitæ. Of these last, the arbor vitæ is the most enduring, while the hemlock is the most beautiful. The trumpet honeysuckles, running over a fence of wire, or iron pipes, make a beautiful ornamental hedge.

Probably more new fences are now being built of barbed wire than of any other material. About buildings, gardens, etc., there is considerable woven wire used for fencing purposes. It is especially valuable in confining poultry. Fences are becoming less general in Pennsylvania. About twenty years ago people in the towns and villages began to dispense with them. Then, as timber became more and more scarce, farmers removed the inside fences on their farms. Owing to pressure brought to bear by the farmers upon the Legislature, that body two years ago abolished the fence law of the State passed in 1700, so that now in this State a farmer may fence, or not, as he sees fit. He must care for his own stock and need not fence against his neighbor's. The repeal of the fence law (which required every one to fence his cultivated fields) generally gives satisfaction in the older portions of the State, but in the timbered counties the people prefer a fence law, for under it they could pasture their cattle in the woods.

EARLY POTATOES.

DR. A. G. CHASE, KANSAS.

When the Early Rose was first introduced I succeeded in raising marketable tubers in sixty-seven days. I thought it rapid growing, and a year or two later I reduced this four days, and before they went out of date I brought the Rose down to sixty days. Last year I grew the Early Ohio in fifty-three days, and concluded that was about the best that could be done, as it was a very favorable season up to June 1.

This year the last half of March, when we usually plant the early crop, was very wet, as was February, and the soil was packed, run together, as we term it, cold and clammy; but my neighbor across the road planted his Early Ohios between the 15th and 20th of March, although his ground was in no condition to work. I let my potato ground remain undisturbed until the 24th of April, gave it a heavy coat of well-rotted stable manure, mixed with the scrapings of the barnyard, which included about one-third of the bulk of soil, had it back furrowed in narrow lands, and planted Early Ohios, large seed, the 25th. Owing to continued and heavy rain they have had but one plowing and one hoeing. The first bloom opened the last day of May, and I dug the first mess June 11, forty-seven days from planting. To get a mess for five persons I pulled up the half of three hills, and the largest potatoes were two and a half inches in diameter. At this date my neighbor, the Squire, could find none larger than a marble, although they were planted three weeks or more before mine; and while the most of them came through the ground they had made no root.

In upward of thirty years' experience in gardening, and a trial of all leading sorts on the market, I have never found any with so many good qualities as the Early Ohio. It stands without a peer for the amateur or the market gardener in earliness, yield, quality, and keeping. The sprout from the eye in early spring will average nearly double the size of any other early potato I know of, and this, in my observation, bespeaks its earliness and yield. I always shun a seed potato with delicate and feeble-looking eyes.

DANGERS IN HORSE-SHOEING.

D. M. WEBB.

A correct knowledge of the science of horse-shoeing is as difficult to obtain as knowledge of any science, and yet the great body of our horse-shoers are men who have but the faintest appreciation of the principles that underlie successful work of this kind. The wearing of any shoe whatever is an unnatural condition for a horse's foot, but the unnaturalness is aggravated a hundred fold by the very prevalent ignorance in fitting the foot for the shoe, and in properly fashioning this iron or steel appendage.

The owners and trainers of trotting-horses realize keenly how much the animal's work is dependent upon the weight, the shape, and the fitting of the shoes. But the owners of work- and ordinary driving-horses, as a rule, take them to the smith and order them "shod"! They very commonly then walk away to attend to other business in the village or city, while the blacksmith rushes through his work and has it done when the owner calls. If the horse goes decidedly lame he is taken back, and a nail is drawn out and inserted in some other direction, or the shoe is reset, in the hope of better "luck" the next time. The danger from such a course lies in the fact that the evils of improper shoeing are not always apparent, but a continual strain from an unnatural position of the leg, or a pinching here, or the bearing coming on the wrong place in the foot there, very materially assists in "using up" a good horse, and so shortens his years of usefulness.

The remedy lies in employing only such shoers as one has reason to believe are thoroughly skilled in the art, and also in making oneself so familiar with the subject that he may be able to properly direct the work if he sees it is being done improperly, which will necessitate the owner's presence when his horse is shod. Moreover, the principles that apply to one horse's feet may not to another's. The owner must study the needs of the individual animal if the best results are to be secured, and a man is not fit to own a horse if he will not give it this attention. Some horse-owners will allow the shoes to remain on until they become loose. This is poor economy from every point of view. The shoes should be frequently reset, both to keep the feet in a healthy, growing condition, and also to secure the best work that the animal is capable of. A horse whose feet are uncomfortable is as disinclined to move with alacrity as a man would be under the same circumstances. Again, some farmers tire their horses out, and so lose much work, by compelling them to carry an unnecessary weight of iron around with them. It is a tiresome matter to work in yielding soil with heavy shoes on, as a man ought to know from his own experience. Light shoes, without calks, are best fitted for farm work where there is no danger from slipping. It allows the foot to come down to the ground more in accordance with Nature's method of horse-shoeing.

It is necessary that the feet be frequently examined to see that no nail has been pulled out or become imbedded in the hoof, and that the shoes have not become broken. With less complete reliance upon the blacksmith and more careful investigation into the general principles of shoeing, and especially into the needs of his own horses, there will be very much more comfort in the farmer's stable, and most likely more money in his purse.

THE CARE OF ROAD HORSES.

W. CHESTER, MASSACHUSETTS.

When one considers how horses are usually treated when they are unharnessed from a long drive, it is a source of wonder that there is so little sickness among them. Could we know, however, what percentage of lives are shortened by such want of care as is so often apparent, we should probably see that the relation of cause and effect is in force here as well as elsewhere. Except in the severe weather of winter, horses are frequently placed in their stalls unblanketed, after a drive that has warmed them so that every pore in the body is open, though they may not be apparently sweating. Rapid cooling, if it does not bring on a cold, will surely weaken the animal for future work. There is rarely a day, even in summer, in our Northern States when a horse should not have a light blanket thrown over him when he comes in from road work, while in winter it is, of course, especially important that the chest and abdomen be thoroughly protected, as it is not by the ordinary stable blanket. When a warm horse is placed in a cool stable in winter his blanket should not only cover his chest completely and closely, but should pass completely around his body and be fastened closely. The blanket that simply covers the back and hangs down the sides of a horse leaves exposed to the cold that part of his body most susceptible to chills. There ought to be a box stall in every stable into which a warm horse can be put while cooling off. His own heat will soon warm the temperature, and he will there be secure against draughts, but the blanket is necessary all the same. A great many farmers never think it necessary to clean the mud from their horse's legs, and rub them dry after they have come in from wet and muddy roads. A pail of warmed water and a stable sponge will make all clean in three minutes' time, and as little more will suffice to rub them dry with an old piece of cloth that should be kept for the purpose. The mud and gravel ought to be cleaned out of their feet at the same time, and a clean bed of straw or other material given them to stand upon. How can a horse's feet keep sound when all kinds of filth work into them and remain there, perhaps for days? When a horse has been perspiring his hair becomes full of the exudation which is mixed with dead skin and dirt, if the road be dusty. When the surface becomes dry this accumulation should be brushed out or the hair and skin will get into a very unhealthy state. Too few farmers' horses have that bright, glossy coat that betokens a healthy skin.

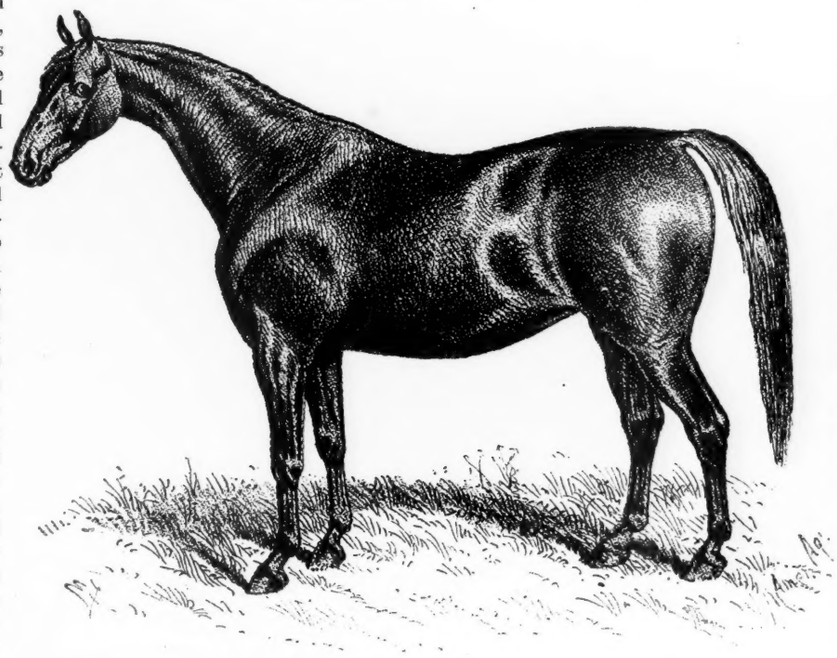
Again, it should be remembered that horses used for road work require a different food ration from that needed by those that are not called upon for rapid exertion. The men who train and care for the fast trotting horses of the country know what foods are best suited to the needs of road horses, and they depend largely on oats, with a small quantity of bright hay for the rations that they give. As there is great muscular waste in this work, a muscle-forming food is needed. It is also of much importance, in the case of road horses, to see that the shoeing is properly done. Where the feet play such an important part in the work one cannot watch too closely to see that nothing goes wrong, either in the manner of shoeing, or in the time when it needs to be done. Horses' feet are frequently injured by allowing the shoes to remain on for too long a period without resetting, and they are more frequently injured by ignorant workmen. When horses are to be turned into pasture for any length of time their shoes should be removed and their hoofs carefully trimmed, if trimming is needed. Their feet will thus have a chance to rest, and the ankle muscles will regain their tone if strained through imperfect shoeing. Care in the points mentioned will do much toward lengthening the working life of our roadsters, and toward rendering their daily service more valuable and more agreeable.

THE YORKSHIRE COACH-HORSE.

The Yorkshire coach-horse is descended from Cleveland bay mares crossed with thoroughbred sires, and has its origin in the demand for showy and speedy chariot horses for London in the early part of the present century. It would be difficult to say on exactly what lines the coach-horse is bred, many being very curiously crossed, and in some instances after several crosses of halfbred horses a cross of thoroughbred on a cross of Cleveland is introduced. The recently established stud-book may, however, be expected to regulate that in future.

The best specimens of the Yorkshire coach-horse are generally those nearest allied to Cleveland bays. Those having a preponderance of thoroughbred blood, although showing frequently more quality, are as a rule leggy and deficient in bone. A very popular and successful method is to breed "once out and twice in"—that is, one thoroughbred cross and then two of Cleveland Bay. This is expected to impart quality and action without losing any of the substance of the Cleveland Bay.

The Yorkshire coach-horse is not known under that name in the United States, though many very good ones have been imported. But they rank here as Cleveland Bays, distinction being made between them and horses bred strictly on Cleveland Bay lines. At the last annual meeting of the Cleveland Bay Association the rule was adopted that "Cleveland Bay stallions having five, and Cleveland Bay mares having four successive crosses by sires recorded in either the Cleveland Bay or Yorkshire coach-horse stud book of Great Britain or the Cleveland Bay stud book of America shall be eligible to record" (in the latter). A proposition to combine the Cleveland Bay and the Yorkshire Coach horse societies of Great Britain, and unite the stud books is not without advocates in high places. Mr. W. Burdett Coutts, M. P., the eminent breeder and writer, says in the *Brookfield Stud:* "What is really the most valuable horse that these breeds can produce, and what, therefore, should be the object of their societies for the benefit of the farmers who breed them undoubtedly is the big harness horse, standing from 16 to 16.2 in height, with the bone and shortness of leg, the depth and grandeur of frame which are in the Cleveland and are not in the Yorkshire Coach horse; with the quality, elegance, and action which are in the Yorkshire coach horse and are not in the Cleveland; with the 'long, elegant top line' which is only produced by a combination of both. * * * To this end a combination of the Cleveland Bay and the Yorkshire Coach Horse societies, and a fusion of their stud books is, for all purposes for which such societies and stud books are valuable, absolutely necessary. It is worth noticing that the Americans, who are a very practical people, and prone to disregard empty theories and antiquated prejudices with a clear-sightedness which does them great credit, took this step immediately the breeds became known to them, and both are now included in one American stud book."



THE YORKSHIRE COACH MARE, PATIENCE 118.

Patience (118), the Yorkshire Coach mare depicted herewith, won the first prize and the Queen's medal at the Royal Agricultural Show, Windsor, in 1889.

Wood or Tin Hive Separators.—Bee-keepers are agreed upon this point: If separators are to be used loose, as in the T-super, wood is the best material; if nailed fast to wide frames tin is preferable. If a wood separator is nailed fast, the shrinking and swelling of the wood causes the separator to curl sidewise, or it may split. If it becomes injured in any way, there is the annoyance of its removal and the nailing on of another. If a tin separator is not nailed fast at its ends it takes advantage of this freedom to bend a little here and there, instead of keeping stretched out straight, while a wood separator will not bend in the direction of its length.

ONE EAR ENOUGH.

C. L. HILL, MINNESOTA.

In saving seed corn the aim is naturally to select ideal ears and such as are found on ideal stalks. While in exceptional cases it may be desirable to select from stalks bearing two or more ears, to the mass of farmers one good ear is enough; and it is easier to obtain such an ear than to get two poor ones. It is not difficult to see where the temptation of wanting two-eared stalks creeps in, for the farmer's mathematics point to such as to a pathway leading to double crops. But the same kind of reasoning might as well suggest the plan of putting twice as many hills on an acre. In both cases the results are likely to be disappointing, and for similar reasons. We need not try to cheat Dame Nature, nor expect "something for nothing" even from her hand. What we gain in one point we lose in another. The double-eared stalks require the best of soil, the best of care, and twice as much room as the single-eared ones. For best results there can be but one stalk to the hill, and an accident to this one stalk wipes out the whole hill. Another objection to the many-eared stalk is that it does not do equally well by all its ears. One is pushed ahead, while the others follow at intervals; the ripening is uneven, and the later ears are likely to be soft when the frost comes. It takes about one hundred and thirty medium-sized ears of corn to make a bushel when shelled. Whatever the distance between the hills, in planting corn supposed to yield one ear to the stalk, a fair number of stalks per row will be indicated by the number of feet the row is in length. Thus, one stalk every foot, two stalks every two feet, three every three feet, four every four feet, or an average of three and a half to every three and a half feet; either will give good results. If the rows are one-fifth of a rod apart it will take just eight hundred rods of rows to make an acre. Every eight rods will have its one hundred and thirty-two stalks, enough at one ear to the stalk to yield a bushel of shelled corn. At this rate an acre will yield one hundred bushels. Now let us cut these figures squarely into halves to allow for missing hills, failure to bear, and all sorts of accidents, and we still have the fair yield of fifty bushels per acre, or more than twice the actual average yield for this country as shown by the government reports.

Why not be satisfied, then, with one ear to the stalk, provided we make that one ear the fattest, soundest, and best that lies within our scope of development? Nature is usually sufficiently prolific in regard to numbers, and improvement generally lies in the development of size and quality. It is our work to pinch off blossoms and shoots, to thin out and prune, and keep down Nature's normal numbers, in order to heighten the quality. The result is not only a better grade but a greater yield when measured by bulk or weight instead of count. It is sometimes rather difficult to go through a large field of corn and trim it down to one ear to the stalk, but with a little careful practice any intelligent man can go through a field and prune it quickly and properly. If any one doubts the superior merit of this method let him set aside half an acre or more and test it in this manner for a season, treating it in all other respects of cultivation the same as his main crop. This will fully test the matter, and give him a valuable experience.

BEST GRASSES FOR HAY AND FOR PASTURE.

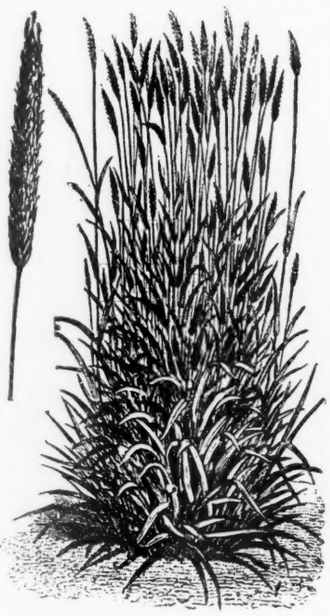
While grass is one of the most valuable vegetable products of the soil in temperate climates, whether as a rotating crop or as a permanent pasture, it receives far too little attention at the hands of most farmers. Experiments which will tend to show what are the best kinds and mixtures for varying conditions of soil and climate, and determine at the same time what amount of seed it is most profitable to sow must therefore be—if properly conducted—of great service to agriculturists.

A series of such experiments has been carried on for two years at Spring Valley, Rockland Co., N. Y., by Peter Henderson & Co., under the superintendence of Mr. A. Forbes. The land selected for this purpose is an exposed knoll of only fair soil, and where one would hardly expect to see a rich growth of any vegetation without heavy fertilizing. The soil had for some years previous been badly run down, and, in order to fit it for the purpose, one ton of bone meal was spread over the two acres; then a crop of fodder corn and clover was grown and turned under in the green state, and after the grass was sown, ten loads of yard manure were spread over as a top mulch. A good crop of grass was taken off last year, and this spring the land had an additional dressing of three barrels of bone meal and three bags of guano. The results of these experiments, the progress of which we have watched with interest, show conclusively that intelligent farming pays quite as well with grass as with any other crop. Had this two-acre plat been still more heavily fertilized there can be no doubt that the crop of hay would have been much heavier. As it is, there was probably a loss of ten per cent this year in weight because the hay was cut about a fortnight later than it should have been. These tests may be placed under three headings: First, the different systems of laying down land to permanent pasture, the quantities of seed required per acre, and the cost of doing so. Second, the laying down of land for temporary hay and pasture, or "rotation cropping," the quantities used per acre and the cost. Third, the experiments with the various special kinds of grasses used in making the foregoing combinations.

TALL MEADOW FESCUE.

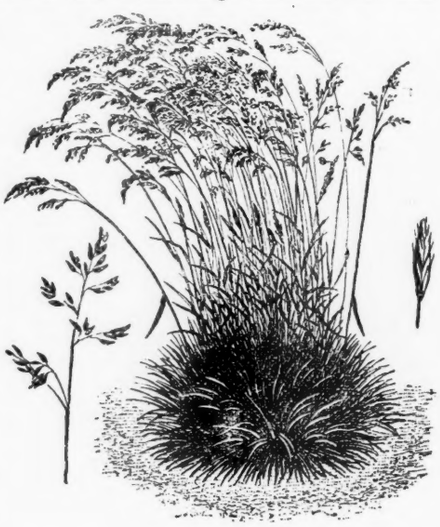
There were twelve plats, of one-sixteenth of an acre each, for the testing of permanent mixtures. The first plat illustrated the method of Faunce de Laune, a British farmer of French extraction who has done much toward causing seedsmen to sell cleaner, better grass seeds to the agriculturists of Europe. The grass in the Faunce de Laune plat consisted of about seventy-five per cent of the strong-growing species, such as Meadow Foxtail, Orchard Grass, Tall and Meadow Fescue, Timothy, Rough-stalked Meadow Grass, etc., but none of the Rye grasses were used at all. There was a little Yarrow mixed in as a condiment. This mixture with ten pounds of clover, sown at the rate of not quite three bushels to the acre, produces a heavy sod and a good yield of hay. The first cutting on this plat last year yielded 4,224 pounds of cured hay, and this year the yield was at the rate of 4,480 pounds. The hay produced by this mixture is excellent and increases in quantity year after year if a little top-dressing is judiciously applied; the seeding down, however, is rather expensive, costing about $14 per acre.

The second plat, illustrating the Lawsonian method, is probably more popular than any other in Great Britain, no doubt because it is considerably cheaper than Faunce de Laune's, and yields well; the sod, however, does not seem to be so good. The basis of this mixture is English and Italian Rye Grass. The quantity used in the test was at the rate of two and one-half bushels of grass seeds and twelve pounds of clover per acre. The yield was 4,800 pounds of cured hay per acre last year, and 5,040 pounds this year, showing a decided increase over plat No. 1. But it is questionable whether No. 2 is as good as No. 1 for pasturage. Nevertheless, it is a very good mixture for general purposes in this country. The cost of seeding down is about $8.50 per acre. The third plat was a very good one. The stand when seen by us was heavy, and the sod promised to become quite dense. This mixture is a modification of Faunce de Laune's system, the cost being greatly reduced by increasing the quantities of some of the lower priced but valuable grasses. While the cost of seeding has been reduced about one-third in this way the actual quality has been lessened very little, if at all. Last year this plat yielded in cured hay at the rate of 4,700 pounds per acre and 4,080 pounds this year—a slight decrease caused by the effects of the drought in the earlier part of the season on the Timothy, which formed an ingredient in this mixture. Two bushels of grass seeds and ten pounds of clover per acre was the rate used, at a cost of $10 per acre.



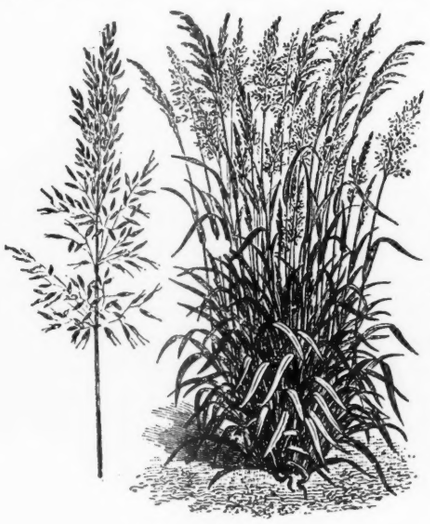
MEADOW FOXTAIL.

Plats, numbers four to ten, devoted to Henderson's permanent pasture mixtures, are suited to various conditions, representing different quantities of seeding per acre. They form the most important experiments of all, illustrating what are the best mixtures for permanent pastures and the quantities of seed that ought to be used per acre. By a judicious choice of seeds, mixtures have been effected which will give constant pasturage in this climate from early spring until late in the autumn. Or, if preferred, they will yield a heavy crop of hay, and a few weeks after are ready for use as pastures, and will remain in good condition for this purpose until winter sets in, and again yielding a good hay crop the next season, and so on year after year. In some of these mixtures the turf is remarkably close and tough, the grass roots matting together thoroughly and going deep down, thus forming an ideal pasture for dry regions and droughty seasons, as well as being secure against serious injury by sheep or cattle, since the roots have so firm a hold that they cannot be pulled up when the leaves are nipped or pulled off. In early spring, in these pastures, such grasses as Sweet Vernal and Meadow Foxtail appear first, followed by Orchard Grass, Oat Grass, English and Italian Rye

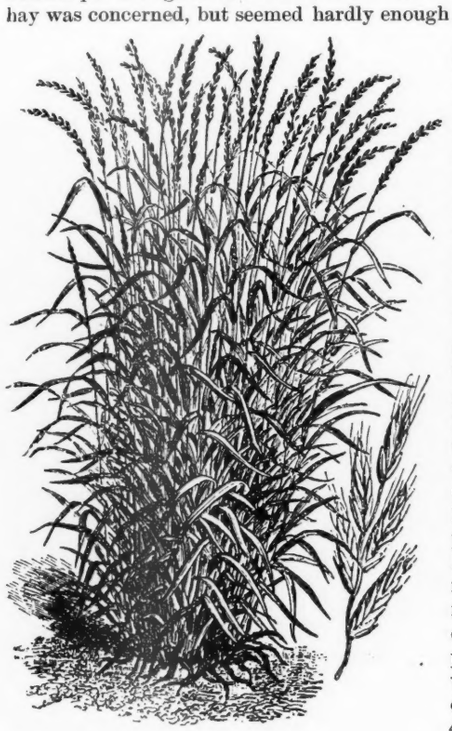


HARD FESCUE.

grasses and the various Fescues; then appear in due order the Creeping Bent, Poas and Red Top. Nor are the clovers neglected, for they form an important element in these pastures. The Mammoth Perennial and Alsike almost vie with the taller grasses in their luxuriant, leafy growth, while the White Clover helps to bind the sod and render the pasturage more succulent and nutritious. In this mixture to which plats number four to number ten are devoted, Orchard Grass occupies the same place that certain other strong-growing grasses do in the Faunce de Laune mixture. It is perhaps one of the best all-around species for the purpose that could be used in this country, for it makes a tall, heavy growth under ordinarily favorable conditions; it flowers so early, too, that it can be cut before the Oxeye Daisy comes into bloom. This is an important consideration now that so many thousands of acres in the Eastern States are actually monopolized by that worthless weed, and which may be kept in check to an appreciable degree by being mown yearly before the seeds are formed. Hitherto it has been customary to recommend at least four bushels of seed per acre of the special mixtures, but these experiments show pretty clearly that three bushels per acre will be quite sufficient. In fact, as low as two bushels per acre gave remarkable results the first season, so far as hay was concerned, but seemed hardly enough to form a close turf.



YELLOW OAT GRASS.



ITALIAN RYE GRASS.

Henderson's Special Mixture for Hay and Permanent Pasture, sown at the rate of two bushels of grass seed and ten pounds of clover per acre, yielded at the rate of 4,928 pounds of cured hay per acre last year and at the rate of 5,088 pounds this year; while the same mixture, at three bushels of grass seed and ten pounds of clover per acre, yielded but 4,368 pounds of cured hay per acre last year, and 4,160 pounds this year. Again, the same mixture sown at the rate of four bushels of grass seed and ten pounds of mixed clovers per acre yielded only at the rate of 4,256 pounds of cured hay per acre last year, and 4,320 pounds this year. The sod of this last, however, after cutting the hay off, was seen to be much closer than in either of the other cases and would therefore be a much better pasture and more able to withstand drought.

In the two-bushel plat the various grasses and clovers had each more room to grow rapidly and vigorously, making a heavy crop, but the sod itself, after the crop was removed, was not so dense as in the others. The plants grew more in tufts, left many interstices rendering it somewhat liable to injury by drought, besides not being quite so good pasturage as the others. But for hay alone two bushels of grass seed and ten pounds of clover per acre seem to be enough.

Three bushels of grass seed and ten pounds of clover per acre seem to be abundantly sufficient under ordinary circumstances. The cost of seeding down in this manner is from $7 to $11.50 per acre, according to quantity used, and when it is considered that the result is a permanent pasture in reality it will surely be conceded that the object attained is not too costly compared with Timothy or any one temporary grass. Timothy, and in many parts "Timothy and clover" is the standard grass in the country. While Timothy is a valuable grass, there are some other kinds so much better, which last longer, yield a heavier crop, will stand various climatic and soil conditions better, and cost no more for seeding down, that it is astonishing that the majority of farmers should still stick to the Timothy without even giving one or more of the other kinds and mixtures a fair trial.

In the Spring Valley experiments plats the ninety-sixth and thirty-second of an acre each were used to test the various individual grasses and mixtures of grasses for temporary hay and pasture, viz., "rotation cropping." In none of the mixtures does the comparison and the improvement seem so marked as in these, although all have been eminently successful. Judging from the results obtained these temporary seedings need only cost from $3.75 to $6.50 per acre for a series of one to five years. Two bushels of mixed grass seeds and ten pounds of mixed clover per acre are quite enough. In fact, plats sown to only one bushel of grass seed and ten pounds of clover per acre did remarkably well, yielding at the rate of 4,860 pounds of cured hay per acre last year, and 4,800 pounds this year. Plats sown at the rate of two bushels of grass seed and ten pounds of mixed clover seed yielded at the rate of 6,528 pounds of cured hay per acre last year, and 5,760 pounds this year; while Timothy, sown alongside under exactly the same conditions in every way, yielded only 2,400 pounds this year and but thirty per cent higher last year. When it is considered that by a very small additional outlay at least double the yield that can be produced by Timothy will be obtained by the use of other grasses and mixtureswhich are of just as good quality as Timothy, and some of them better, it is strange that farmers are not willing to depart from the old, deep-worn ruts, and thus effect considerable financial gain. Moreover, the well-established facts should be sedulously practiced that a topdressing of well-rotted barnyard manure ought to be applied evenly over grass lands in the autumn, and a light dressing of any good fertilizer early in the spring. It should also be remembered that a discriminate mixture of grasses and clover gives a better result than does any kind grown by itself, for the simple reason that mixtures are bound to grow closer together on the ground, and thereby their component species protect one another from undue heat and drought. In summing up the results

TALL MEADOW OAT GRASS.

of these experiments the following points appear to have been pretty well established:

That not only rich valley bottoms but even exposed hills of ordinary soil will produce profitable grass crops, if properly prepared, and that it pays to fertilize pasture and hay lands just as much as it does to fertilize corn, wheat, and other lands:

That for permanent and temporary pastures it pays best to use a carefully selected and prepared mixture of grasses and clovers, using two bushels per acre, if abundance of hay in preference to heavy pasturage is desired; that three bushels of mixed grasses and clover be used per acre if a good ordinary hay crop coupled with good general pasturage after the crop has been removed is wanted; and that four bushels of the same mixture should be used if fine dense turf capable of withstanding heat and drought, and almost constant feeding, is preferred to a very large hay crop and but ordinary pasturage:

That for temporary pasture and hay two bushels per acre, of a properly selected mixture, is enough, with the necessary clovers, and that under certain conditions one bushel will do:

That such mixtures are far superior to Timothy or "Timothy and clover," or any one grass, costing but a little more, lasting much longer, and giving frequently more than double the yield:

That carefully selected mixtures at all times pay better than any individual species grown alone, be it poor or good:

And, finally, that a light annual topdressing of some good fertilizer applied in the spring is a cheap and paying stimulus to the growing grass.

NOMENCLATURE OF JAPANESE PLUMS.

PROF. K. TAMARI, IMPERIAL COLLEGE OF AGRICULTURE, TOKIO, JAPAN.

It is to be regretted that there should be so much complaining about the confusing nomenclature of Japanese fruits in the United States. The cause of this is frequently ascribed to the undeveloped condition of pomology in Japan, and that in place of well-established names only local names are employed. Naturally, there are various local names for the same varieties, but hardly more so than is the case in America. To quote from Charles Downing "Some varieties are sold under three dozen names for the same thing." Local names here are used in special localities only and, when such varieties are introduced to the public generally, established names are used. The fact is that the nomenclature of Japanese fruits is more confusing in America than it is in Japan. The leading causes for these conditions are principally that these fruits were collected by foreigners directly from persons who have the trees for their own use and are indifferent as to their names, or importers have them collected by middle men who have no knowledge of the fruits and their names, and who are not reliable. Further confusion is produced by the difference between the origin of the Japanese and English languages. When writing a Japanese word in Roman letters there is no longer any meaning as to its spelling; the aim in this case being only to approach to the original sound. For instance, *kaki*, the Japanese persimmon, may be written *kahky* or *kahkey* when the vowels are pronounced long as *kake* instead of *kaki*, as is sometimes done in America. As another instance may be mentioned the Japanese seedless mandarine which is sold by one party in San Francisco under the name "woonshiu," while another party sells it as "oonshiu." Japanese words may sound like murmurs to Americans, and when a wrong name has been established it is not easily corrected, and even where names have been correctly written originally, they are, not rarely, changed in copying. Naturally, names unpronounceable by the English tongue cause perplexity and alter the original sound.

In Japan plums especially I notice a great confusion of names in the United States which is even the case so far as to the name of the "Japan plum." In the Southern States *Biwa* (*Photinia Japonica, Humb*) is called "Japan plum," which is entirely incorrect, as no one could mistake this fruit for any kind of plum. *Mume* (*Prunus Mume*) is known under the same name also, and I think is classified by some among apricots, but it is certainly in all respects more like an apricot than a plum. There is a vast difference between a plum and mume; as much so as there is between an apple and a pear. Under its botanical name, *Prunus Mume*, there can, of course, be no mistake, yet some Japanese who are not familiar with botanical names may translate mume as plum, and so we find it in old English and Japanese dictionaries.

There are three other sorts included under the common name of plum in English, or Smomo in Japan; these are Hatankio, Beni-Smomo and Smomo. If Hatankio is not a species of Prunus, it is certainly nearly related to it. Its habit of growth is slender, and the young shoots and branches are straight and erect; leaves large and longer, lighter colored; the fruits are not sour, but rather bitter when young, and freestone; never colored in flesh nor skin, which becomes a yellowish green, and afterward slightly tinted with purple red. *Botankio* is said to be a round-shaped variety of this group. Kelsey's plum is no doubt a variety of Hatankio. *Beni-Smomo* comprises a group of red-fleshed plums. In Satuma, my native place, Honsmomo and Yonemomo are the most noted and familiar fruits of this group. The former is smaller in size and deeper in color than the latter, which is the most highly esteemed. In some districts the plums of this group are called *Uchi-Beni*, which means "inside red." The skin of this class or group is not colored, although the fruit appears purplish and mottled, according to the color of its flesh. Another group of plums is that of *Prunus domestica*, the commonly cultivated plum of America and Europe. Its skin is deeply colored or of a yellowish green, and its flesh is sour and mealy.

Summarizing these facts, and in order to simplify the classification of these kinds of plums, in regard to the color of the fruit only, I state that *Hatankios* are never colored inside or outside, though they are slightly tinted in the skin; *Beni-Smomos* are colored inside; *Smomos* may have colored or colorless skins, but are never colored inside.

Mr. L. A. Berckmans, of Georgia, has in a former number of the AMERICAN AGRICULTURIST given an accurate description of the varieties of Japanese plums which is highly commendable to American as well as Japanese pomologists. Mr. Berckmans has done excellent work in simplifying the nomenclature of Japanese fruits in America. While I do not intend to alter or correct the names that have been already adopted, and which are in common use, I wish to draw the attention of pomologists to a few names which are quite different from the original Japanese. Mr. Berckmans says "Japanese catalogues give *Botankio* the following names: Botankin, Togari, Sinome and Hattankio." I am quite sure that Botankin and Hattankio were never pronounced in any locality in Japan. Togari is correct and means "the pointed." Sinome may stand for Smomo, the *m* having been changed to *in* and the *o* to *e*. Shiro-Sinomo should be Shiro-Smomo, which means "white plum." *Masu* may be *Maru*, meaning "the round." Ura-Beni should be Uchi-Beni.

WINTER WHEAT IN THE EAST.

GEORGE E. NEWELL, NEW YORK.

From the 1st to the 20th of September is the best time to sow winter wheat in the latitude of central New York, but I have sown it the first week in October, at the 44th parallel, and reaped a fair harvest. The unsuccessful wheat grower will often find the cause of his failure in a rough, clod-strewn seedbed. To raise a good crop of wheat a mellow, well-drained field should be selected, in a location where it is not customary for the snow to blow off the ground in winter. If the land has not been lately cropped it should have been summer-fallowed, and it should not be "soddy" in the least. If the soil has not been kept up to a high state of fertility phosphate could be harrowed in to great advantage to the forthcoming crop. If it is deemed desirable to seed the land down it should not be seeded to grass when the grain is sown, because the grass coming up early in the fall will take strong root and dwarf the growth of the young wheat. A thorough harrowing of the soil previous to seeding is necessary to pulverize all lumps, and reduce the land to a mellow consistency. If the crop is not drilled in care must be taken to sow the grain evenly, and to put on some two bushels of seed to the acre. Great care should be taken that the seed used is perfectly free from cockle, chess, and grass seeds. The wheat should be sown early enough in the fall to permit the young plants to stool out and well cover the ground.

If in a good location, the grain is then well fortified against freezing out, a great drawback with many would-be growers here. Land that will freeze and heave will, of course, seal the doom of the crop, so for the cultivation of this grain avoid an exposed field. The finest crop of wheat that I have ever harvested as to quality was raised on a sandy loam with a clay subsoil. The grain should not be sown in so sheltered a situation that the access of wind is practically shut off, as thereby danger of by rust is liable to occur.

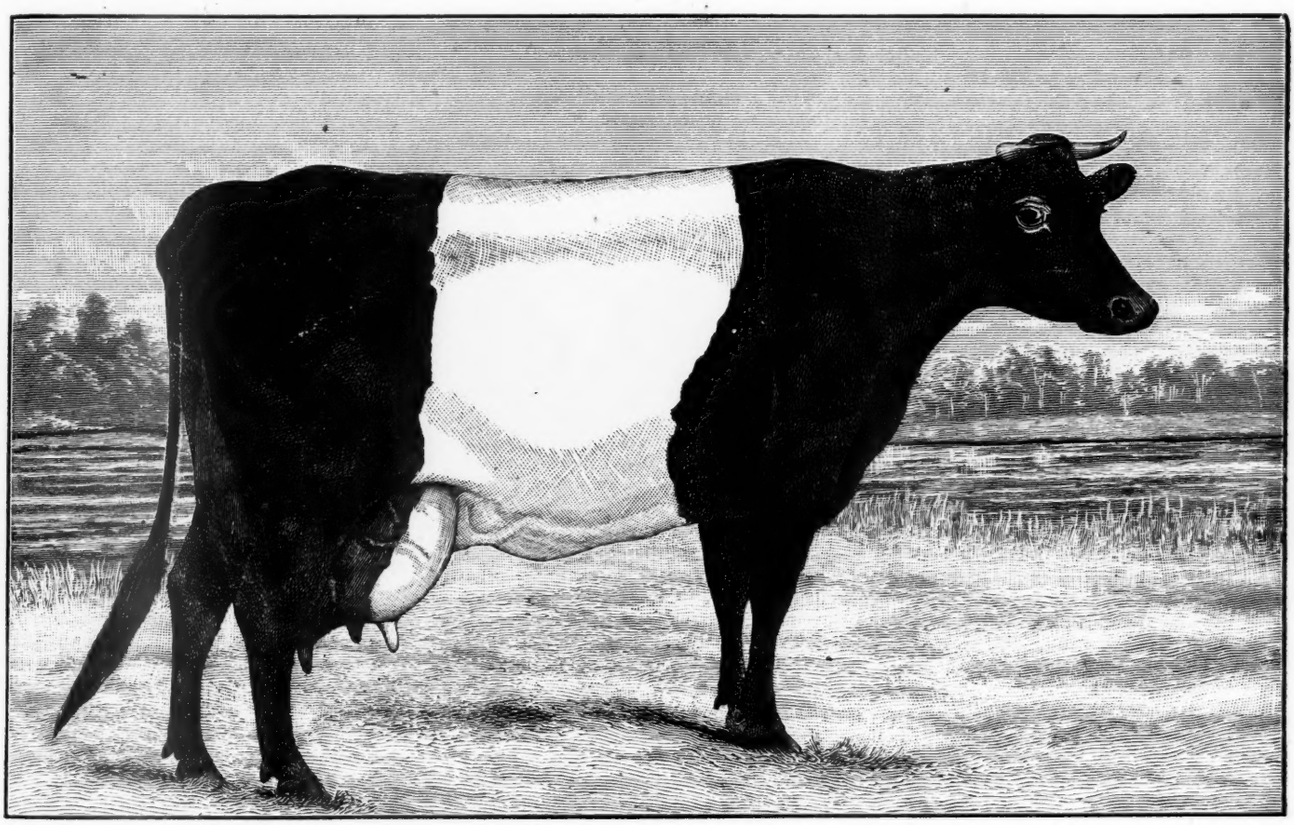
While Eastern farmers may have no desire to compete with their Western brothers in the production of wheat as a chief farm crop, the subject of its more extensive culture on the foothills of the Alleghenies is worthy of deep thought and investigation.

DUTCH BELTED CATTLE.

L. S. HARDIN.

While Dutch Belted cattle are by no means a novelty in this country, having been bred here for many years past, yet there has not been any furore made over them. This may be owing to their exclusive and aristocratic origin. The Belted cattle of Holland are said to have always been confined to the herds of the nobility, and bred specially with a view to retaining their peculiarity of markings, and with the highest quality of milk-giving capacity.

Every one is familiar with the black and white "Holstein-Friesians" that have become so popular in this country. The Belted cattle of Holland are of similar characteristics, not being quite so large, averaging about one thousand pounds, while the Holstein-Friesian will go nearer to fourteen hundred pounds. The Belted cattle are very evenly and uniformly marked, as seen in the accompanying engraving, with front and hind quarters a solid black, with a white belt around the middle. This breed is becoming very popular in some of the Eastern States, particularly in Pennsylvania, and according to report they deserve it, for when a one-thousand-pound cow gives, as they are said to do, an average of over ten thousand pounds of milk a year, it surpasses all the other breeds we have in this country, regardless of their size.



THE DUTCH BELTED COW HULDAH NO. 141 D. B. C. A.

Our illustration represents Hulda No. 141 D. B .C. A., and is the property of Mr. H. B. Richards, of the Avona Farm, Pennsylvania. She is said to be a remarkably good specimen of the Dutch Belted breed, and was bred from a family of American breeding where form has been the principal object in view. Her general outline shows the desirable wedge shape, large and spacious digestive organs, a large udder, and well-defined and prominent milk veins, while her body is compact and symmetrical. She has given eighty and a half pounds of milk a day, and five hundred and fifty-two pounds in seven days while being fed regularly with the herd. She weighs about one thousand pounds when in full flesh, and was bred and developed by her owner.

These cows are now in the hands of competent breeders in this country, who are using every exertion to bring the milk and butter product of the breed up to that high standard of race reproduction that is now so marked relative to color, shape, and size. The Dutch Belted Cattle Association has adopted a scale of points upon the lines of what is thought to be the ideal dairy cow. All the members of the association are breeding with this ideal in mind, and having such thoroughbred and well-formed stock as a foundation they cannot fail to obtain complete success in a short time. The rules of the association require each animal to have a strong and vigorous constitution and that gentle disposition which is so characteristic of all the races of Dutch cattle. From the small size of the cows and the very large yearly yield of milk they should soon become popular in dairies in the neighborhood of cities and large towns. The color of the cows alone would be a good advertisement.

There are at present about seven hundred registered and standard bred Dutch Belted cattle in the United States. The principal herds are kept in the Eastern and Middle States, where they are attaining great popularity as dairy and family cows. On account of their striking and unique markings, and their excellence of dairy quality, they should be made a feature in agricultural fairs of the country, and we hope to see them out in full force at the coming Columbian fair.

One point I would like to impress upon the breeders of the Dutch Belted and that is in order to make the breed popular, and that should be the object of all breeders, it must be brought more prominently before the public. As it is now we hear of this breed through the public press but rarely, and then only in relation to a single animal or herd. Other dairy breeds are now either pushing to the front or holding their own in that position by the publication of milk and butter tests and this is just what the breeders of the Dutch Belted should do. There is no doubt of their capacity to perform; all that is necessary is enterprise among the breeders to let the world know what they can do.

How to Sow Plaster and Guano in Windy Weather.—Take a sloping box or tub, put into it as much plaster or guano as will fill it two-thirds full, fill nearly full of coarse wheat bran. Then, with a wooden spatula or stick three inches wide and an inch thick, with one end shaved down to form a handle, in the right hand, and a sprinkler full of water in the other, slowly add the water while stirring, till the whole is like fine bird shot, when it is ready for being sown. In this way the fertilizers will be saved at home on one's own land, clothes, beard, and eyes kept free from dust and the small fertilizing material dropped just where its stimulating influence is needed. These results will repay one for the slight trouble of preparing the material.

Raising Flowers for Profit.

ELLA RODMAN CHURCH.

While there are many comforts and enjoyments attached to a country life, and certainly better health under proper regulations, the wife of the average farmer has usually the all-work-and-no-play which makes Jack a dull boy, and which makes her no less a dull woman. There is a monotonous round of days in her week, each with its uncongenial and strength-wearing tasks, and her husband's hired men only add to her labors, while hired women to lighten them are not to be thought of. She does not often see money; eggs and butter are taken to the store, and such necessaries as they cannot raise on the farm are received in return. Other necessaries, such as a new book, a crisp magazine, or a pretty bonnet and dress, she never sees at all.

Some mild day in April, perhaps, Mrs. Farmer may notice that the sweet-williams and pinks are sprouting in the ugly little bed that is edged with a piece of board, and wonders if the May rose will have many blossoms, but she is too busy and too tired to give them any care, and she goes wearily back to the kitchen to see to the "men-folks'" dinner. If only the scales would fall from her eyes, and she could be made to see that she is wasting her best years! The poet says that "some lives must be dark and dreary"; but when the darkness and dreariness proceed from causes that can be overcome by a little energy and resolution there is no merit in submission.

Most women love flowers, and those who cultivate them faithfully will find that they possess solid charms as well as fleeting ones. The rage for flowers in decoration and on all festive occasions seems only to increase with the years, and as the city florists cannot supply the constant demand bushels of flowers are raised by land owners out of town. This is the golden opportunity for the weary and inexperienced woman; and although there is plenty of work to be done it is much more agreeable work than the kind that seems never finished. But foundations must be thoroughly laid before a harvest can be reaped, and while waiting for this there are things which grow of themselves that can be gathered and marketed.

Thus the story is told of a capable woman who, being left a widow with no capital but four small boys, turned them into the woods one day in early spring to gather arbutus. Their home was conveniently situated, being near the woods on one side and having a small station on the other; and to this station the boys took their little bouquets which the mother arranged very prettily with ferns and grasses. Nearly all the passengers bought them, they were such a dainty surprise; and when the arbutus harvest was over this wise woman gathered whatever the region offered. Her farm was an extensive one, being all out-doors, and her taste in arranging the flowers gave an air and a grace to the simplest blossoms. Her bright little helpers were scouring the woods at sunrise for their stock, and by getting them so early they kept in better condition than wild things usually do. The stems of the breast-knots and bouquets were carefully packed in wet moss, and the flowers were fresh and dewy when the little merchants boarded the train.

When wild strawberries appeared quantities of little birchbark baskets were made and lined with green leaves to hold the fragrant fruit; and this was gathered and prepared with as much care as the flowers were. All the berries followed in turn, even to wintergreen berries, and all yielded most encouraging returns. Goldenrod and Michaelmas daisies also had their turn; and birchbark baskets and canoes, filled with ferns, and mosses, and other woodsy things, growing in their native earth, were a grand success, not only with the railroad passengers, but among the summer boarders in the neighborhood, who used them to decorate their rooms. By taking great pains and making use of everything, the mother and her boys had a nice sum in hand for winter expenses.

The Woman Who Speaks Her Mind.

HELEN MARSHALL NORTH.

In every neighborhood there is usually one woman, if not more, who is "not afraid to speak her mind." It frequently happens that the neighbors are afraid to have her do so, but that makes no difference. She is not always a bold, Amazon-like creature. Sometimes she is a delicate, intellectual woman who scarcely seems to have the courage which must manifestly belong to one of her genus. She evidently considers herself more honest than her neighbors. *She* never disguises disagreeable truths. If the Y's have indulged in extravagant table linen or carpets, she, being a deacon's wife and happening to know the state of their charitable fund, feels quite at liberty to relieve her mind of the unkind thoughts which have arisen therein, and to do this in the presence of a company of other women, if possible. She is not afraid to tell the minister that he will preach the church empty if he continues to deliver temperance sermons. She knows just why the doctor failed to cure a desperate case of pneumonia, and frankly tells him of it. The young woman who has lost her lover, and the one who is attracting too much attention from gentlemen, are other objects of her especial regard. No age, sex, or condition has sufficient dignity to subdue her freedom in speaking her mind, and the neighbors all agree in wishing that her mental powers were less acute.

The worst feature in this woman's case is that she and most of her friends—for there are few brave enough to become her enemies — believe that she is unusually virtuous. She calls her bitter readiness to speak disagreeable truths by various names, such as candor, frankness, honesty and courage. The fact that she casts poisoned arrows right and left, and inflicts wounds that lie unhealed for months, even years, does not enter into her consideration. And, still worse, her example is contagious. Other women, timid women, inspired by her freedom, learn to speak with disagreeable candor, and the trouble grows.

If the woman who speaks her mind will consider for a moment the real motive that prompts her to the free use of her mischief-dealing tongue, she may discover some wholesome and instructive truths. Does she wound the faithful minister because she really believes his influence is sensibly weakening? Does she honestly believe that she is helping the careful physician, or any other of her numerous victims? Would or does she as readily speak agreeable and pleasant things; and is her heart so overflowing with loving-kindness that she longs to right all the wrongs that come under her observation and so increase the sum total of human happiness; or is it, rather, a gratification of her vanity to be considered remarkably keen and penetrating, a very astute person who can discover and bring to light facts that would otherwise escape general notice? If she were truly kind of heart, would she not prefer to tell the fault or error in private to the offending one, in Biblical fashion, and shrink from even the possibility of wounding by giving it publicity?

Instead of being courageous she is cowardly. She is not open-hearted or frank in the best sense of the word, and her brusque, bold manner of making disagreeable statements seldom accomplishes any good result and almost invariably gives offense. What woman wishes to become that disagreeable creature who "is not afraid to speak her mind?"

Making Coffee.

NINETTA EAMES.

Coffee, as commonly prepared by persons unacquainted with its nature, is a decoction, and is boiled some time under the mistaken notion that the strength is more thoroughly extracted by this process; but just the reverse is the fact. The fine, aromatic oil which produces the flavor and strength of the coffee is dispelled and lost by boiling, and a mucilage is also extracted thereby which tends to make it flat and weak. The best modes are to confine the coffee to a biggin or strainer, and then pour boiling water over it; or to put the coffee in the pot, pour on it boiling water and let it stand in a hot place for a time not exceeding ten minutes. The Turks and Arabs boil their coffee, it is true, but each cup is boiled separately, and then only for a moment, so the effect much more nearly resembles that of infusion than decoction. In serving they do not separate the grounds from the infusion, but leave the whole in the cup.

A Simple Ear Trumpet.

ADDIE ARCHER.

Here is a message for those who are afflicted with severe deafness. A lady of my acquaintance has been very deaf for several years and has tried various ear trumpets without much benefit. She now has one so useful that others may try it and be pleased with the result. It is simply a hollow roll of pasteboard, such as is used for protecting pictures or architect's plans that are sent by mail. It may be a yard long, or of convenient length to reach from the mouth of the speaker to the ear of the listener, which is, of course, placed near the opening of the roll. This opening at the end is usually about the size of a silver half dollar, or possibly a dollar. Experience will prove which gives the best result.

It is most difficult for some to converse with a deaf person. The afflicted one realizes it, and often feels sensitive about it. The deaf miss a good share of enjoyment as they sit quietly at home. Even the bright conversations, those little nothings that perhaps might chase away some dull thought, are not heard. They are not considered of enough importance to risk straining one's voice. Deaf persons are not usually overrun with callers. They do not understand the art of making their voices distinct, or they say some stupid, dull remark twice over in their loudest tones. Now a call on the lady who uses this simplest of ear trumpets is a mutual delight. Both being seated in easy chairs, the roll between them, an animated conversation is carried on in the usual tone of voice between the lady and her caller.

The Care of the Eyes.

M. W. EARLY.

It is most desirable to rest our eyes in every way that we can. I have recently gained an excellent idea on the subject of resting eyes, from a lady wearing black. Whenever she took out any sewing to do she put on a large white apron to form a background to the sewing, as she expressed it. She said it was a great relief to her eyes, which otherwise would have been strained by falling on her black dress, for you cannot avoid looking down a great deal at your lap when your work is lying in it. When a woman has black or dark sewing to do, she should choose bright, sunny days to do it, and do nothing but white or very light-colored sewing on dark, cloudy days, if she must sew at all in such weather, which however is a thing to be deprecated and avoided. It is far better for a housekeeper to devote such days to odd jobs, not inflicting any strain on the eyes, such as putting her storeroom or garret thoroughly to rights, packing away clothes and other articles not in season, oiling and rubbing furniture, etc. Never do sewing at night, unless it is absolutely forced on you, and if circumstances compel you to do it, mitigate the evil by doing only white sewing then. I am strongly in favor of suspending all manual work after nightfall. When the whole day has been spent in work I think the farmer and his wife are entitled to a little rest and recreation at night, and the lack of this will make them wear out the sooner and will steep their higher faculties in the dust of materialistic concerns and anxieties. If the eyes are to be used at all at night let it be in reading from some periodical or standard work, but be sure that the print is clear and good, else the injury to your eyes may offset the benefit to your mind. Let the reading be done aloud, and I know of no more delightful and improving way of whiling away a long winter evening in a farm house where the household are cut off from contact with the outer world and its amusements and recreations. Where there are half-grown boys and girls in the family, the habit of reading aloud in the evenings is doubly important and desirable. It is true we country people wish our sons and daughters to grow up understanding about the culture of the soil, the proper management of hogs, cows and domestic concerns, but we do not wish their thoughts

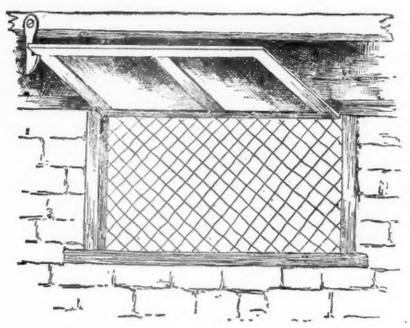
wholly tied down to these things, and we cannot better counteract this tendency than by devoting our evenings, especially our winter evenings, to reading aloud to and with them, such works as Macauley's, Walter Scott's, Dickens', Thackeray's, Miss Mulock's, and the productions of other ennobling authors. This will confer a thousand fold more benefit both on the mother and children than for her to delve over her work basket all the evening. If you have any kind of musical instrument in the house, however, give part of the evening to music, no matter how simple and unpretending it may be.

Eye diseases have been alarmingly on the increase of late years. The cause of this I would leave scientists to declare, but I would hazard the suggestion that this increase of eye diseases and the augmented passion for embroidery and other fancy work are facts not disconnected with each other. I would certainly beg my readers who have the least tendency to weak eyes to eschew embroidered lambrequins, table and beaufat scarfs, splashers and crazy quilts. To have their whole house filled with these things will not compensate them for having their eyesight impaired, and themselves debarred from the many interesting and ennobling pursuits to which the eye forms the introduction. I believe I may safely assert that there is no other organ which is at once the avenue of so much delight and so much instruction as the human eye; therefore, we cannot value and guard it too much, both in ourselves and our children.

A Perfect Cellar Window.

HOLLISTER SAGE.

To secure health in the home the cellar must be thoroughly ventilated. Nineteen out of twenty



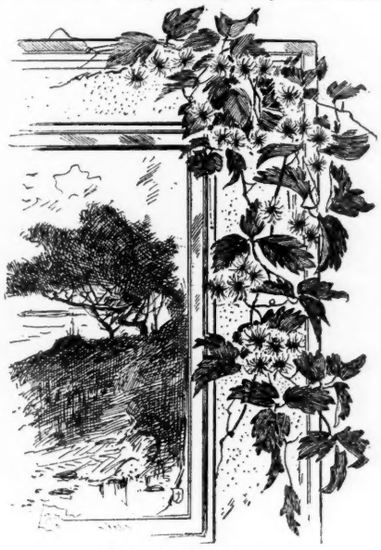
TO VENTILATE THE CELLAR.

times the cellar is a damp, musty, foul-smelling place unfit for a family to live over. The reason for this is often because there is no convenient way of airing it. If hung on hinges, the windows can be opened frequently and will be, for what good housekeeper going into the cellar daily and knowing a catch and hinges are placed at every window will not let out the gases and let in the air? The catch is easily made of wood and fastened by one screw to a floor joist. It need not be more than an inch thick, and must be hung so near the window that when swung up it will push back the catch, which will immediately return to its place and hold the window so that no wind can blow it down. Without these attachments a window removed is likely to get broken. Covered outside with poultry net, no animal can enter or leaves blow in. Easy to clean, such windows let in light, so filth in the cellar is seen and removed. A wood screen or thick curtain to each window is necessary to keep out light where vegetables are stored.

Fern Platters.

C. DORA LIEUELLEN.

On my table and in my window are two pretty ornaments that anybody anywhere can make. My hostess gave me a large, oval-shaped, cracked platter and a broken fruit dish with a stem, and the ferns were the booty of a morning ramble. I first covered the bottoms of each with some thick moss, I put the green next the plate so that the roots and soil collected about them should furnish nourishment to the ferns to be planted. Then I placed neatly, round after round of a low-growing Lycopodium, and here and there a clump of a larger growth, in leaf and color much the same, and filled bits of green moss into the niches. A short limb well-covered with club moss, I worked in, in an oblique position on the long platter, with good effect. Whenever it rains my dishes are set out to get the benefit of the shower and, no matter how dried and sorry looking they were before,



VINE DECORATION.

they become, after this, circles of green, graceful beauty.

A Harvest of Autumnal Beauties.

ANNA HINRICHS.

Many autumn beauties may be "harvested" for indoor winter decoration. Among the first of these to mature is the popular cat-tail. Cut early in September, with long stalk and leaves. Store in a dry place until seasoned. If cut too late the heads soon burst after coming into a warm room; but if cut at the proper time they may be carried over from one year to the next. Golden-rod may be preserved in a similar manner. If gathered as soon as out, it will retain its gleaming yellow perfectly. Shelter until thoroughly dry, when the stems will be hard and woody. Milk-weed should also be gathered quite early, before the pods burst, in which case there is little or no annoyance caused by the seeds flying. The silky fiber having the brown seed picked off makes a most delightful filling for soft, silk cushions. It also makes the daintiest of sachets. Sew silk veiling or crepe into a bag, and fill with the silk of milk-

A MARKART BOUQUET.

weed, delicately perfume, tie with a ribbon, and ornament with light bangles. This is the prettiest sachet imaginable.

Few are aware of the fact that the graceful hop vine keeps its tender green if cut so soon as the heads are developed. Cut in long pieces, and strip off the leaves. It is pleasing twined about statuary, mirrors, pictures, or a great bunch of it draped above the sideboard. The brilliant red and orange of the bitter-sweet forms a rich contrast with this delicate green. Cut before the seed-vessel has opened disclosing the berry. Tack long pieces of it above the folding or ordinary door. So arrange the twigs to give the effect of its being one, long, continuous vine. The airy clematis has an ethereal appearance, festooned, in some fanciful manner, above the piano or over a lace curtain.

An unique decoration consists of brightly colored and other twigs. There is the red dog-wood, cork elm, the curled tips of the bitter-sweet vine, thorny twigs of the honey locust—all of these are arranged in any design to suit individual taste. A cluster of the catalpa seed-pods makes a dainty ornament, suspended from the chandelier or above the door. With metal paint, some are bronzed, gilded, etc., and several left the natural color. As the season advances, collect an abundance of the fancy headed grasses and quantities of oats, wheat and rye. The grain is prettier if it can be plucked from the growing field; if taken from the stack it is inclined to turn a dirty yellow.

The celebrated "Markart" bouquet, illustrated herewith, is nothing more than an artistic arrangement of grasses, delicate leaves and gracefully branching flowers. Various grasses, grain, cat-tails and golden-rod, enlivened with bright sprigs of bitter-sweet made a charming bouquet of this nature. The style is intended for a large vase on a small stand, but is also made into a flat design as a wall decoration. Gorgeous butterflies pinned to the feathery tips of the golden-rod, dragon-flies and stuffed humming-birds seemingly darting amidst this mass greatly enhance the charm of the whole.

"Boudoir Heavens."

A. H. LOUIS.

The original of this fanciful term is nothing more than a pretty conception in silk and lace,

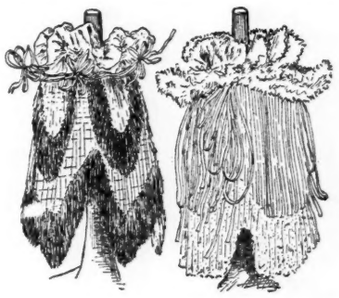


FIG. 1. CREPE SHADE. FIG. 2. LACE SHADE.

and is commonly known as lamp shade. There is really nothing that affords so comfortable, so romantic a light as does a lamp, shedding its soft glow through a delicately tinted shade. A study lamp must have its light unobstructed (that is, having only a shade of milk glass) but, in my lady's boudoir or in the parlor the shimmering light of these pretty "heavens" lends an indescribable charm and is, moreover, a magic beautifier. When the lamp is already provided with a glass globe, an airy creation of lace and ribbons is easily tied on. If the lamp be without this fundamental safety globe, a similar protection of wire and mica can readily be improvised.

Fig. 1 is of rose pink crepe. Double to one-third the depth, and gather very full, making the fluffy frill at the top. Each edge is cut into four rounded scallops, edged with fine pink silk fringe. Narrow ribbons trim the frill, at the same time adjusting it to the protecting shade. A conformity to fashion's partiality for "white and gold" is represented in Fig. 2. It is of very fine white lace, six inches deep, with an over-border, to a depth of four inches, and slightly rounded, of narrow yellow ribbon. A full double ruche of inch wide lace finishes the shade.

FIG. 3. SKY SHADE.

A sky shade is pictured in Fig. 3. This creation is more consistent with its fanciful name of "boudoir heaven." In the ordinary milk shade this form is quite common. Make a covering of

azure blue China silk to fit smoothly over the shade. With crescent, and stars of varying size, decorate the silk. This embellishing is best done in metallic water colors, but may also be cut of gilt paper and neatly glued on. A puffed border of yellow crepe along the lower edge, down the seam where the silk has been joined, and a frill of the same at the top, completes this charming design. An ungainly glass lamp may, in a few moments, be transformed into an article of appropriate beauty for the parlor. French tissue paper is the magic device effecting this transformation. Take a square of paper, as large as the sheet permits, and crease finely from the center out. Then cut out the center, *i. e.*, the point of the square, leaving deep, irregularly pointed scallops. Finish the outer edge in a similar manner. This creased paper, of conical form, is shaped to the body of the lamp by being tied to its foot. The wider, upper end conceals the body of the lamp, and the lower covers its support or foot. (See Fig. 4.) The shade is made in a like manner of a square of paper the required size. Crease from the center down, and cut both upper end and lower edge into deep irregular points. Red or yellow are the preferable colors for this purpose.

FIG. 4. PAPER SHADE.

A Black Silk Apron.

Nothing prettier or more serviceable than soft black silk can be chosen for an apron when one wishes to put it to real service as a dress protector in the home, office, or store, and at the same time desires to add a pretty touch of style to a plain costume. The illustration, Fig. 1, shows a plainly fashioned but handsome apron of black silk trimmed with crocheted black silk lace and two widths of black gros-grain ribbon. The wider ribbon forms the folded belt and bow at the back, and the narrower ornaments the pocket and the shoulder points of the pinafore—which is arranged to form soft folds from the shoulders to the belt, and lie smoothly in V-shape over the bust. A diagram is given, Fig. 2, showing the shape of the pinafore pattern and how to lay the plaits at the belt and shoulders; the skirt and pocket are so simple in shape that home dressmakers cannot fail to copy the design correctly. The pattern would be equally pretty and appropriate for aprons of fancy silk trimmed with ribbons and lace frills.

FIG. 1. A DRESSY APRON.

The Care of Children's Teeth.

D. WORCESTER.

The men and women who have not suffered in some way from a lack of care given to their teeth during childhood are to be congratulated; but their number is small compared with that of those who have good reason to mourn over such neglect in their own youthful days. Parents as a rule are too little thoughtful of this very important matter. Because the first teeth are not permanent is no reason for allowing them to be neglected. The habit of properly caring for them should be fixed in the child's daily life even at this early age, that decay may not get a foothold even upon the milk teeth, since disorders in other parts of the body may be induced by such a condition in the mouth. When the permanent teeth begin to appear there is special need of careful watching that the first teeth do not stand in the way of those that are coming. Much irregularity and unnecessary disfigurement may result from such neglect. Again, the permanent set often comes in such a crowded condition that those in front are pressed out of their proper position and made irretrievably irregular. A skillful dentist ought to be consulted at such times to see if the trouble cannot be averted, perhaps by the removal of a tooth. While one will sympathize with the dread which a little one may feel at the thought of such a visit, a few moments' pain should not be allowed to weigh against years of annoyance and pain that may come afterward, for a crowded condition of the teeth is one of the causes of decay.

When the permanent teeth appear it is certainly a wrong to the child not to watch for the first signs of decay. This trouble can be largely avoided by a scrupulous use of the toothbrush and other means of cleansing the teeth after eating; but in many cases decay will come even with excellent care. When it does come the teeth should be filled at once, and an examination made by a dentist at least once every year to look for new cavities and

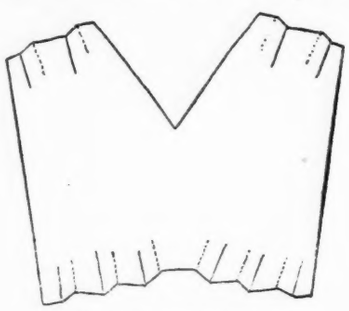


FIG. 2. DIAGRAM OF PINAFORE.

to see, also, that the old fillings are all right. Too many aching teeth are removed that should be filled and made to serve as good servants for many years. Prevention of decay is far better than filling, but filling the teeth is vastly to be preferred to removal and the substitution of artificial ones.

We hear frequently of the duties which children owe their parents. Looking carefully after the teeth of the boys and girls is one of the other kind of duties—those which parents owe the children—and, unfortunately, sometimes fail to perform.

Puritan Lace.

Chain thirty-two, turn.

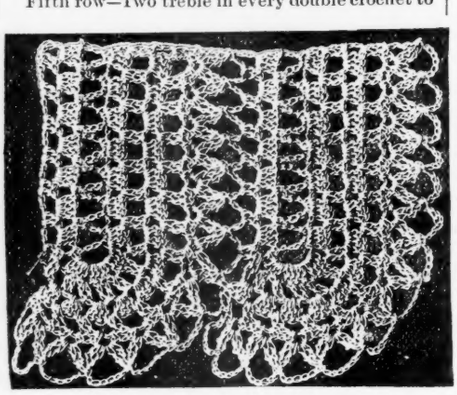
First row—Treble in seventh and eighth stitches, *chain two, pass two, one treble each in next two stitches, repeat from star to end of chain (seven pairs of trebles), chain three, turn.

Second row—Four treble over each two chain to end (seven clusters of four trebles each), turn.

Third row—Chain seven, two double crochet after four treble, repeat from beginning six times, chain seven, turn.

Fourth row—Two double crochet in every loop with two chain between, chain three, turn.

Fifth row—Two treble in every double crochet to



LACE FOR CROCHETING.

end; to begin scallop, *chain one, four treble over last chain, repeat from star once, chain one, three treble over chain, single crochet in end of second row, chain three, turn.

Sixth row—Treble at beginning of last three chain, chain two, one treble each in next two treble, chain two, two treble over one chain *chain two, one treble each in second and third trebles, chain two, two treble over one chain, repeat from star once, chain two, two treble after every four treble to top, chain four, turn.

Seventh row—Four treble over every two chain (thirteen times), *one treble in last treble, chain four, turn.

Eighth row—Two treble after every four treble with two chain between each pair, chain two, turn.

Ninth row—Two double crochet with three chain between over two chain, chain one, repeat from beginning over every two chain to end, *and same over last four chain, double crochet in treble where four chain began, chain seven, turn.

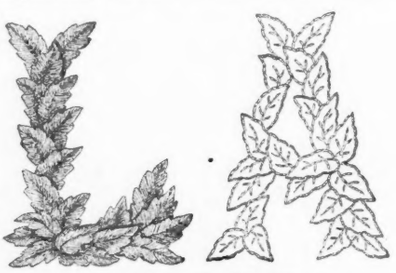
Tenth row—Two long trebles (thread over twice) in first three chain; the last stitch of each treble is kept on hook, not worked off till both are made, then all three stitches on hook are worked off together, *chain seven, two long trebles in same three chain, two long trebles in next three chain; keep last stitch of all four on hook, then work off all five at once; repeat from star eleven times, chain seven, two long trebles in same place as last and one long treble in top all worked off (four stitches) together, chain five, turn.

This completes the first scallop. Begin again at the first row, working each pair of trebles in a loop of seven chain with two chain between each pair. Each scallop is joined to the preceding one at the ends of the seventh and ninth rows. Work the seventh row as far as the star, then one double crochet in preceding scallop at beginning of first open loop of scalloped border, chain two, pass two stitches of chain, double crochet in next, chain two, turn. Work the ninth row as far as the star, one double crochet where preceding row joined first scallop, chain seven, turn.

Where the first end of the lace is to be seen, as on an apron, it would be an improvement to finish it with scallops to match the other end of the lace thus: Carry the ninth row of the first scallop around the work to the top of the plain side, turn at top, and work the tenth row down, then around as directed.

New Initial Letters.

The artistic initial letters offered this month are exceptionally valuable to those in need of such



INITIAL LETTER DESIGNS.

designs. They are not only novel and beautiful but as plainly readable as the most ordinary capitals—as initials for marking should always be, but the handsomer letters seldom are. They may be embroidered with cotton, floss or silk on bed or table linen, towels, garments or fancy work. The right hand design shows chestnut leaves gracefully grouped to form the letter A. In fine white cotton it is pretty for bedding or in white or colors for any household purpose. For the model it was developed in gold-colored silk on white linen, in short, closely set outline stitch. This stitch is preferable for all ordinary purposes, but for some things particularly dainty and nice satin stitch produces a richer effect, especially if worked with silk in two or more shades of the same color. The pretty leaf-initial L is brought out in two shades of warm leaf-brown, the sketch plainly indicating the manner of setting the stitches and where to add the darker touches after the design has been smoothly covered with the lighter shade. For ornamenting a silk or velvet block for a quilt or cushion, for a ribbon book-mark, a fancy bag or a sachet such letters are always liked. To an appreciative recipient they often double the value of a pretty gift. By using oil or water colors the leaves may be shaded in the natural tints of summer or autumn foliage. With only a little skill in drawing, and these initials for guides, one may easily

design several other letters in the same style, I or H from L, and M, N or W from A.

Bits of Fashion.

The pretty capes, the natty little blazers and double-breasted sailor jackets are found more useful than ever at the season when fall and summer meet; and September sees a number of other stylish wrappings coming to the fore. Of course there is the "Stanmore" cape—which made its *debut* in the spring—fashioned of all sorts and conditions of cloths, with deep yoke, pinked edges and a full ruche around the neck; and the three-quarter length box coats which are particularly worn for driving, and which, it must be confessed, are vastly more useful than beautiful.

Made of light colored and light weight cloth, they hang loose and straight from the shoulders, while inch-wide straps are stitched outside all the seams. The sleeves curve down in a rather odd way over the hands and are faced with velvet or novelty silk. The turned-over collar matches the lining and is edged with a band of the cloth. There are many pockets, large and small, and good-sized pearl buttons form the favored fastening. Most novel and most smart of all, however, is the frock-coat which suggests the old blue coat and brass buttons of the typical country squire, made familiar to us by English fiction. For these showy garments are particularly liked in navy or brighter bluet blue and the glitter of gilt buttons is often enhanced by facings and lapels of gayest yellow. Serge is the material generally used, and it is cut double-breasted and extending nearly to the knees, with cross seams at the waist line. A revers collar, notched, finishes the neck, wide cuffs adorn the sleeves and large side pockets and narrow lapels set on the back of the skirt give the *cachet* of the season. For traveling and "outings," comfortable little caps of cloth or silk, in subdued colors, with soft gathered crowns and stiff visors, are largely worn. A veil does not look well with these.

Silk petticoats are the delight of the feminine mind, but when ready-made cost too much for the ordinary purse. More than half can be saved, however, by buying nine yards of glacé or surah and making it at home. Have five straight breadths, finished by a hem and gathered upon a yoke with the fullness well massed at the back. Trim with two narrow, bias ruffles.

Those who are weary of the straight skirts, so long in vogue, will welcome the round apron overdresses, with tablier front bordered with a small flounce. This is a particularly pretty style for India and surah silks, while other draperies are often given a slight "movement" by plaits at the top. A very neat finish for the bottom of dress skirts is given by scallops cut about three inches in width and bound with wool braid.

Dainty collars and plaitings of sheer linen cambric, with lace, embroidery or drawn work is a new Parisian fashion, and will divide favor with the becoming folds and frills of Chiffon mousseline, which edge the neck and wrists of many dressy gowns.

Those fortunate enough to possess real lace should now make good use of every bit of it, but there is a great deal of excellent imitation which is also much worn. The newest is a French lace known as Aspic, which is very fine and light, and has a straight edge. Lace is a favorite trimming for underclothing, as well as for dresses, particularly guipure, torchon and an antique, large-meshed net with a fancy edge.

There is a revival of old fashions that certainly are quaintly pretty; and the girl of '91 looks as charming as the maiden of '41 or thereabouts in a skirt four yards wide, round waist, and silk muslin-bertha or Marie Antoinette fichu, edged with a frill of yellowish lace. Narrow gimp, too, such as may have been tucked away in the family scrap-box for the last forty years has appeared in the shops and is used for trimming basques and outlining the darts.

Silk dresses to be worn in the evening have full draped sleeves and a jabot or vest of chiffon, either black or the shade of the gown.

The long bell skirt, gored up the back, continues as a leading style, and a double box plaiting, pinked on both edges, forms a neat and graceful foot bordering.

Sack gloves of heavy white undressed kid or castor leather, and also those which fasten with four large gilt buttons, will be worn with print frocks throughout the early autumn. Delicate gray and tan glacé kids, however, are used for dress and a stitching of black is again often seen on the backs.

Many girls now braid their locks tightly at night to give a pretty loose wave, which is a French fashion and one singularly becoming to blondes. The crimped hair is then arranged high, low or medium, as is preferred. Catogan braids continue to be the favorite style for young girls, and if tied with ribbon it should always be black.

Pen, Ink, and Paper.

ADELAIDE L. ROUSE.

I spent a month with Elmira last summer. Elmira is an excellent housekeeper; her bread is perfect, her linen is as white as snow, and she has a place for everything and everything in its place except pen and ink. A trifling exception, you may think, in an otherwise perfect *menage*, but it did not seem trifling to John one hot, sticky July day. John is Elmira's husband, and one of the most patient of men; but let the most patient man in existence leave his haying and come to the house with a neighbor to sign a paper, if pen and ink are missing the chances are that something will be said that would not look well in print.

John came in with a neighbor who was to sign a receipt. He went to the sitting-room closet, where writing materials are found when an occasional letter is written (their's is not a literary household); he found a bottle of ink, mostly dried away, and a penholder minus a pen. Elmira's hands were in the bread, but she ran in answer to John's call. After some searching in a jar of lamplighters a pen was found and fitted in a holder. The ink was improved by the addition of a few drops of water, and as no other paper was at hand a leaf was cut from one of the children's copybooks. John wrote the receipt, stopping once to remove a hair from his pen, and as he had no blotter he passed the damp paper to his neighbor, who wrote his name and blotted it with his square thumb, and then wiped the thumb on his hair. After John had made the remarks alluded to and vowed that if he lived through haying he'd have a place under lock and key where he could find writing materials without scouring the neighborhood for them, Elmira went on with her bread, John returned to his hayfield, and I, who had always lived with writing materials at my elbow, made a mental memorandum of the incident for future use.

Elmira's is not the only household where it is a work of time to "drum up" the necessary things to do a bit of writing, and oftentimes when these are found a table must be cleared to write on. How much trouble and friction would be saved if there could be a desk in the living room filled with everything needful. The key should hang over it, and every member of the family should have access to it. It should be supplied with paper and envelopes of different sizes, postal cards, stamps, pens, ink, both red and black, pencils, eraser, mucilage, paper cutter, cards, a box of rubber straps, and one of "H" fasteners, newspaper wrappers, and if possible a scales for weighing letters. There might also be a ball of cord, wrapping-paper, pasteboard for doing up photographs, and all the paraphernalia for wrapping up packages.

If such a store of conveniences was at hand how many things that are neglected would be done at once. The acknowledgment for the little gift would not be delayed till you are almost ashamed to send it; the paper you marked to send to a friend would go at once if you could lay your hand on a stamped and glued wrapper; it would not be such a task to mail that photograph or the little package if that ever-handy desk stood in the room. Of course it will cost something to get a desk and stock it, but many of the things will last a long time, and it will pay in the saving of time and temper.

Earth Closets on the Farm.

O. MOFFET.

Many years ago I read in the AMERICAN AGRICULTURIST some useful sanitary lessons, among which were hints on the construction and use of earth closets. Those instructions I endeavored to carry out in a somewhat crude form. I thank the publication to which I am indebted for these wise counsels. If I had not in all these years learned anything but this one idea from that invaluable journal this alone would be ample return for all expenditure in the way of subscriptions. When I look around among my neighbors and see what they have suffered from ill-health, and paid for doctors' bills, my estimate is rather under than over the mark. We have been blessed with eight healthy, rugged children, and have had scarcely a day's sickness in the way of bilious or malarial disorders. It may be inquired, what has been the general health of the country? Good, it is true, but we have been exceptionally exempt from malarial diseases while having a full share of other ailments. Our neighbors use the customary sunken vaults, reeking with pestiferous odors, to poison the atmosphere and to saturate the soil, perhaps contaminating wells and cisterns in close proximity. But while the most approved form of earth closet has a convenient drawer to be removed and emptied at will my plan was only to use plenty of dry absorbents in the way of road dust, wood ashes, or sifted coal ashes, being particular to keep well covered to confine offensive odors, and haul out the contents often to be used as fertilizer. If kept properly the hauling is no more offensive than cleaning out a cow stable. It may be asked, "Do you know that you are indebted to this for your remarkably good health?" I believe I do as well as I know anything in this uncertain world. It is strange that intelligent people do not see these things which so much concern their temporal and physical welfare.

Pickles and Catsups.

KATHERINE B. JOHNSON.

Mixed Pickles.—Take one peck of green tomatoes, sliced, five large onions, chopped, and one head of celery, picked up fine. Put in a jar or earthen bowl with salt sprinkled evenly through. Let them stand twenty-four hours, then drain thoroughly and boil fifteen minutes in two quarts of water and one quart of vinegar. In a porcelain kettle put four quarts of vinegar, two pounds of brown sugar, half a pound of white mustard seed, two tablespoons of cinnamon, one tablespoon of cloves, two tablespoons of ground mustard; when hot add the vegetables, which have been well drained, and cook together ten minutes.

Piccalilli.—Take one peck of green tomatoes, ten onions, one cauliflower and one peck of small cucumbers. Slice the tomatoes and drain through a coarse linen bag. Pick up the cauliflower (a head of cabbage chopped can be substituted) and chop the onions. Mix all together. Sprinkle half a pint of salt over them and let it stand until next day. Mix together one pound of white mustard seed, one ounce of whole cloves, one ounce of cinnamon broken up fine, two ounces of whole peppers. Add to the vegetables half a teacup of grated horseradish and place them in a porcelain kettle in alternate layers with the spices, cover with cold vinegar and boil ten minutes, stirring constantly. After putting in a jar cover with green horseradish leaves and an inverted plate.

Green Tomato Catsup.—Take one peck of green tomatoes, ten large onions and half a pint of salt. Chop the tomatoes and onions and thoroughly mix; then place in an earthern dish in layers with the salt and let them remain twenty-four hours. Mix together one-fourth of a pound of white mustard seed, one tablespoon of allspice, one of cloves, one of ground mustard, one of ginger, two of black pepper, and half a pound of brown sugar. Put the vegetables, after being drained, in a porcelain kettle, add the spice mixture, cover with vinegar and boil slowly two hours, stirring almost constantly.

Tomato Catsup.—Slice up one peck of ripe tomatoes; boil until tender and strain through a wire sieve. Add to them one tablespoon of ground cloves, one of allspice, two of cinnamon, one teaspoon of cayenne pepper, two tablespoons of salt, two of ground mustard and one pint of vinegar. Boil slowly three hours, stirring often.

Plum Catsup.—Wash and cook one peck of sour blue plums until tender; then sift through a wire sieve. Add half a pound of sugar, one pint of vinegar, two tablespoons of ground cinnamon, one of mace, and one of allspice. Cook together slowly for two hours.

Spiced Tomatoes.—Scald and peel one peck of ripe tomatoes. Add four pounds of brown sugar, and one quart of vinegar, two tablespoons of cinnamon, one of cloves, one of mace and one of allspice. Boil slowly two hours, stirring often.

The Little Captives.

ALICE E. PINNEY.

One beautiful day in the early summer, when the woods were green and the birds were singing, and all Nature seemed to be saying "The summer is really here," three little red squirrels lay cuddled in their nest, up in an old oak tree.

"I wonder where mother is!" said Tiny. "It is a long time since she went away. I hope she will bring us some nice nuts, for I am very hungry."

"I wish she'd come," sighed Trip and Tumble.

"I shall be so glad when she will let me go with her. I peeped out of the nest this morning as she was going away, and it looked very pleasant. I am sure nothing would hurt me, and I have a great mind to look out now," said Tumble; but Tiny and Trip began to cry, so she gave it up for that time.

The afternoon passed and Mother Squirrel did not come. "I am afraid Mother has met one of those cruel creatures of which she told us, who roam about the woods and shoot rabbits, and squirrels, and little birds with a gun," said Trip.

Just as it was growing dark Mother Squirrel jumped down into the nest, to be greeted with joyful cries from the three little squirrels. "Where have you been, and did you bring us some nuts?" they all asked at once.

When Mother Squirrel had rested a moment she told them of her adventure, how as she was on her way home early in the afternoon, with a nice large walnut that she had found buried under the leaves, she caught sight of a hunter with a gun. She was so frightened that she dropped the nut, which attracted the hunter's attention, and in a second's time that terrible gun was pointed toward her. "I thought my time had come," she continued, "and I thought of my dear little squirrels at home in the nest as I gave a jump to a branch of another tree and lay very still. There was a loud noise like thunder, but when the smoke cleared away I was not hurt at all. I waited so quietly that although the hunter looked all around he failed to find me, and after awhile he went away. I am thankful to find you all safe; and now you must promise me that you will never leave the nest when I am away."

For the next few days Mother Squirrel remained at home, and after she had carefully reconnoitered she allowed the little squirrels to go out and sit on the old oak boughs, where they had many a merry game hiding among the green leaves, and were as happy as squirrels need be. But one morning she called them in and told them to stay quietly in the nest, for she must go down in the valley to the old chestnut tree to get more nuts, as their stock was getting low.

After she had been gone a short time Tumble peeped out and saw how bright the sun was shining, then began to fret because they must stay in a dark hole all day when it was so pleasant. Finally he boldly resolved to go out a little while. He felt sure there was no danger, everything seemed so quiet. Tiny and Trip remembered their promise to their mother, and would not go out, so Tumble went alone. It did not seem as pleasant as he had expected without Trip and Tiny, and he was just starting to run back to the nest, when he saw something at the foot of the tree. His little heart almost ceased to beat as it flashed over him that it was one of those terrible hunters. He started to run into the nest, but his feet slipped and down he fell through the bushes to the ground.

He knew nothing more until he woke and found himself in a dark place, with Tiny and Trip beside him. When he asked where they were he was told that the hunter had climbed the tree, taken the others from the nest, and put them in this dark place with him. When Tumble tried to move he suffered such severe pain that he lay very quiet until they were taken from the hunter's pocket and put into a wire cage. It was so light at first they thought they were free. Tiny and Trip ran around the cage and climbed up the sides, trying to find some way of escape; all in vain. Poor little Tumble could not walk at all. He lay on the floor of the cage, thinking that if he had been good and stayed in the nest they might all have been there now with dear Mother Squirrel.

At last the hunter came and put a dish of milk into the cage and some nuts, but they were too frightened to eat. Then he covered them with cotton and hay to keep them warm, and went away.

When they woke in the morning the sun was shining, and they could see the green trees. They wondered where dear Mother Squirrel was, and if they should ever see her again? Tumble did not waken, and when the hunter came to see if they were all right he took the poor little squirrel out and carried him away. Tiny and Trip began to feel very hungry. They nibbled the nuts and found they were good; then they drank a little milk, sneezing and splashing it about. They soon found that no one was going to harm them, and they washed their faces with their paws, scratched their ears, and began to feel at home in their new quarters.

The hunter had a little nephew who made him long visits, and he spent a great deal of time trying to tame the squirrels. At last they grew so tame that he could let them out of the cage, and they would chase each other around the room. When they grew tired of playing they would climb upon little Leslie's shoulder, and bite his ears very carefully, and curl up in his arms and go to sleep. He taught them many tricks. Trip and Tiny grew to like their new home very well. Whether they remembered dear Mother Squirrel and little Tumble I cannot say, but they appeared to have forgotten all about them.

PLAYMATES OF THE WOODS.

The graceful pranks and amusing ways of the squirrels became a great source of amusement to all the members of the family. Squirrels are active little creatures and are constantly in motion except when asleep. In their own homes in the woods they spend their lives chiefly in the trees running along the branches and leaping from tree to tree. Trip and Tiny, like all squirrels, were extremely fond of nuts, and the hardest ones gave no trouble to their sharp little teeth. While he had them for pets, Leslie learned a great deal about the habits and likes and dislikes of these pretty little creatures.

Now, sad to tell, Trip, who was very fond of playing on the wheel in his cage, in some mysterious way became tangled between the wires, and one day when Leslie went to feed them he found Trip hanging limp and lifeless. His uncle comforted him by telling him that it was an accident, and they would take away the wheel before Tiny met with a similar fate. Tiny, being left alone, became rather stupid, and ate so much that he grew very fat and lazy, and finally died from overeating. At least that was what Uncle Will told Leslie; but I think he missed his little playmates.

Thieving Cats.

A young miss who reads the AMERICAN AGRICULTURIST and who says that she "makes lots of nice things for the house after the designs in it," desires to know how to cure kittens from stealing and other naughty habits. Kittens, like children, require to be well brought up. They must be encouraged and praised for doing well, and punished for evil doing. Good example goes a good way with both. Let them have their own way, and both will be spoiled. Kittens must be taught by gentle and persevering teaching what not to do.

To feed them at meal-time from the table, and then when they annoy you to pitch them out of doors, is not good or reasonable tuition. Gentle firmness, combined with perseverance, is the most successful treatment for animals. Teach them to understand what you require, and then resolutely demand submission. A little switch for a kitten and a big switch for a child is more persuasive and effectual than a kick or a cuff. A small dose of either will cure the malady. It requires a philosopher to bring up children and cats.

Talking Dolls.

ZELLA MILHAU.

What a marvelous stride there has been from the rag corn-cob dolls of our grandmothers to the charming waxen and bisque beauties which delight the little maidens of to-day. And at the head of all these undoubtedly stand the talking dolls, which are made by a magician. Yes, Bright Eyes, a veritable magician, and one, too, who is a deal more wonderful than the old-fashioned Arabian Nights' sort. This clever man is the genius or good fairy of the nineteenth century, and he is often called the "Wizard of Menlo Park." Better than a trip up a bean-stalk is a visit to the New Jersey village not many miles from New York where Mr. Edison—to give him his true name—has set up a mammoth factory and where thousands of German bisque heads and tons of American wooden arms and legs go in to be united together and to come out as the daintiest of dollies, radiant in silk and satin, with high treble voices, and what is more whole verses of "Mother Goose's Melodies" stored away in their tin bodies, if not in their curly pates. Some recite "Baa, Baa, Black Sheep," others the familiar history of "Mary's Little Lamb," while a few jerk out short sentences, like the one who cried: "I want my mamma!" and so startled the Governor of New York. These tiny elocutionists are named, too, according to their complexions and accomplishments, as "Brown eyes, black hair," "Little boy blue" dolls, "Blue eyes, yellow hair," "Sing a song o' sixpence" dolls," etc.

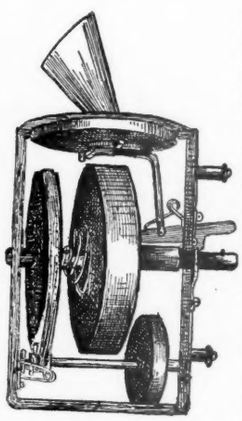


FIG. 1. SMALL PHONOGRAPH.

Oh, what a busy spot that wizard's workshop is! How like magic everything seems, and what a number of hands my little "Lady Goldenlocks" has to pass through before she is pronounced complete! In one apartment a dozen huge steam hammers are heaving and pounding all day long, cutting big sheets of shining tin into proper shapes. Then away these pieces go to the "soldering-room," where they are put together to form the body, a tiny door being left in the back through which a small phonograph may be easily set in or taken out, for it is to an electric talking machine that these chatty manikins owe their conversational powers, while in front between the arms the tin is perforated to let out the sound. In other large chambers the brass cylinders are stamped out; the steel needles and pinions made, the diaphragms fashioned and all polished by machinery as bright as a nickel fresh from the mint. But the most interesting department is the "talking-room," and this is divided into six compartments, in each of which stands a great machine resembling the ordinary phonograph. Inside of each of these instruments, however, is a steel rod on which are strung fifty tiny cylinders, and before it sits the girl who is to teach the bisque puppets their lesson.

FIG. 2. PHONOGRAPH IN POSITION.

Now a "low, sweet voice" is an excellent thing in a doll, as well as in a woman, and the speaker, as she repeats a stanza of the dear old nursery songs into the big V-shaped funnel must take care that her tones be clear and her words distinct, else little "Brown-hair" may recite as though she had taken cold and had a "frog in her throat," or "Blue-eyes" mumble her sentences, as no properly-trained child would ever think of doing. For every wave of sound as it proceeds from the girl's mouth makes a slight indentation on the revolving cylinder, and the least mistake—even a laugh or a sneeze—will be recorded as correctly as the desired quotation. When a cylinder has received its message, a sharp "click, click" warns her of the fact and she goes on to the next and so down the row. For this work eighteen young women are taught and trained to pitch their voices properly and make their lines just such a length; while as soon as one is the least tired she stops and another takes her place. After all the fifty cylinders within the instruments have had verses cut upon them they are taken out and given to a skilled machinist, who puts the phonographs together, fits them in the dolls and turns them over for inspection. Yes, indeed! Each talking lady must pass as critical an examination as though she were about to graduate from a school of oratory, and if she be husky or squeaky or indistinct she is sent back to have a new diaphragm inserted before being packed and shipped off for sale. About one in every five is rejected. The phonograph is worked by a tiny key or crank, by the movement of which the words are made to issue fast or slow. Happy is the young playroom mamma who has one of these interesting children for her very own; but, almost perfect as they seem, Mr. Edison still finds in them twenty-five different faults and promises an improved doll in the near future which shall cast all others in the shade.

FIG. 3. PERFECTED DOLL.

Indeed, it seems like a revolution in toys that the ingenious Menlo Park Wizard has started, and who knows but the merrymen of the circus may be invited to crack jokes and the animals and birds in the parks and menageries be induced to throw the "voices of the wild woods" into recording machines, when we shall have funny clowns telling comic stories, fierce little phonographic lions roaring like veritable "kings of the forest," wee tigers with a true royal Bengal growl, and Edison canaries and bobolinks warbling like the sweetest songsters of our homes and tree tops.

In the accompanying illustrations Fig. 1 represents the small phonograph which is placed in the doll's body; Fig. 2 shows the instrument in position within the tin body and with the crank already attached, while Fig. 3 shows the perfected doll, dressed and ready to "say her piece."

A Knowing Pack-Horse.

JOHN DARE EMERSLEY.

He was a stoutly-built, piebald Oregon Indian pony. His wide forehead and full, bright, mild eyes showed that he was gentle and had good horse sense. The man who sold him said he was the most knowing pack-horse he ever owned. His first work for me was to carry a forty-inch bellows over a steep trail to a mine on a high Nevada mountain. At one point he stopped and turned his head to the right as if to smell the bellows. When ordered to go on he would not move until struck by the driver. After going a few yards the load fell to the ground on the right side. While the lashings were being untied the horse stood quite still, but when the bellows was dragged away he carefully lifted his feet clear of the looped ropes and got outside of them. It was a common thing ever after that for Pinto to stop and turn his head to the side where the pack was slipping, and the driver never failed to take the hint.

I had to go one hundred miles to the nearest town, and rode this pack-horse. A long ride was necessary one day to gain a roadside station. I was overtaken by another traveler, and together we reached the stopping-place at nightfall. The master and two hired men were absent, the mistress and four children being alone, with the nearest neighbor eight miles away. After supper I did not go to bed, like the others, but sat reading. Before retiring I went out to listen for the returning men, and all about the place was dark and quiet then. Shortly after falling asleep a great light aroused me, and I saw flames issuing from the stable, which was near. Hastily calling the sleepers and carrying the children in blankets where if the house took fire they would be safe, I went to the front of the stable, the roof of which was now ablaze. Out of the doorless building there came a horse, walking placidly, as if going to water. The hair being burned even from his tail, I could only surmise by his form that he was my horse. I had no time to heed him further, as the saving of the residence was important, an end which was gained by the arrival of the absentees. The next morning I tried to track the horse, but rain during the night prevented, and as I had thirty miles to go on foot the search ceased. Three days later the landlord found the sufferer two miles away. His eyes were sightless; his mouth was so swollen that he could neither eat nor drink; and strips of roasted flesh hung from his thighs. A shot ended his misery.

It is supposed that a horse will not come out of a fire, but this intelligent animal escaped as soon as his halter was burned. He might at least have been expected to dash out in a frenzy from pain, but he showed neither excitement nor fear. It would have been well for Pinto if he, like my fellow-traveler's horse, had died in his stall.

The stable was fired by an incendiary, who with the aid of oil expected to burn the house and its helpless inmates. The arrival of two horsemen and my sitting up late so delayed his fiendish plans that help came in time to prevent a tragedy.

With the Honorable Club.

LUCY ELLIOT KEELER.

"It was not fair in the girls, but because they are girls, let the subject drop. Forget all about it. You cannot? Then ignore it. Be too manly to let them see that you feel slighted or angry. Be a little more kind and polite to them hereafter than you have ever been before. They will only laugh at you for your pains? Well, possibly. Lynette mocked Gareth at first.

"Do you remember that? Gareth's mother had four sons, and one after another they had gone off to Camelot where King Arthur lived. Only the youngest was left at home. And he was so brave and loving and beautiful that his mother could not let him go.

"Now it was the highest honor in the world to be a Knight of the Round Table, and the passionate desire of every noble youth. Gareth felt that he would go through fire and water to have King Arthur touch him with his sword and say, 'Rise, Sir Knight.' Day and night he begged his mother to send him forth, until at last she said that if for one year he would serve unknown as a kitchen boy he might go. He was so proud, this young prince, that she thought he never would consent to these hard conditions. But Gareth leaped at the chance and became a servant at the palace, washing kettles and bearing all insults patiently.

"It happened that the very day that Gareth was released a beautiful maiden came into Arthur's hall, asking for his bravest knight to ride to the assistance of her sister whom four wicked brothers had confined in a castle. 'Give me the quest, O King,' cried Gareth springing toward the door. And Arthur nodded; but Lynette was angry that Launceolot was not sent with her. 'Fie upon a kitchen knave,' she cried, never dreaming that he was the king's own nephew. And though when he was mounted on his horse there were few nobler looking knights in all the court, still she mocked him, saying: 'Come not near, for yet I smell grease and kitchen odors. I will not have you.' When he followed, for the duty was his, she ceased not to taunt him.

"By and by they came to the first brother, and him Gareth overcame, and likewise the second and the third; and at last Lynette said less haughtily: 'I wonder what you are that you should overthrow three knights and yet be ruled by me.' The Prince answered gravely: 'Damsel, you speak as if it were proved that because I served in Arthur's kitchen I yet could fail to do

all honor to a woman. Lead and I follow.' But she smiled upon him and beckoned him to ride no longer behind, but at her side, and all her false pride was broken. He was her hero, at last, but the change was not in him. He had ever been gentle, and helpful, and chivalrous.

"Listen now, boys, to our honorable pledge: it is almost the very one that Gareth swore before King Arthur: 'To be courteous to all; very respectful to old people; attentive to mothers and sisters, and for their sakes polite to every woman and girl without regard to her station. To be especially kind to any one poorer, weaker or younger than ourselves, and ready to help with our strong young hands any person or animal needing assistance.' So let the girls laugh, if they will, boys. Lynette did at first."

Pleasures for the Young People.

S. JENNIE SMITH.

Winter is the farmer's holiday, and it can be made a joyful holiday for all concerned. The grains and fruits are garnered, the fields lie waiting spring's revivifying touch. Work grows less on the farm and in the house, and the long evenings bring rest and recreation. These evenings are the mother's opportunity, and she may use them to her happiness or misery. Let her bring out from their obscurity in the sacred precincts of the parlor her easiest chairs, denude them of stiff tidies, and place them at the disposal of her family. The money laid by to decorate the spare room could go to purchase a good lamp. Induce father by some means to subscribe for a newspaper. After having three months of its company, twice the amount of its cost would not entice him to part with it. If school must be given up early, let the girls and boys continue their education by reading good books. In some places the Chautauqua circle has done much toward cultivating a taste for first-class literature. At any rate it has given its members something to talk about besides house-cleaning and hog-killing.

Still another improvement in country life would be giving each member of the family an interest in the farm by letting each one own something on it. In one family which I have visited a daughter has taken possession of the chickens, and she manages to make considerable money with them. I don't mean to say that she is on the road to fortune, but I do know that she has many a luxury that she could not otherwise afford. A son raises ducks, thus adding a great deal to his income. The culture of small fruits is another source of money-making for the folks on a farm, and I know a mother and daughter who get a little income from bees.

Music makes so much of the happiness of this life that its lack in the country is to be deplored, and country people as a rule are fond of it and yet ignorant of really good music. One need not be wealthy in these days to possess a piano or organ, and even smaller stringed instruments will add much to the home cheer. But the majority of parents look upon these things as needless luxuries, and go on skimping and toiling, adding a few acres to the homestead or a few dollars to the bank account for the children to inherit some day, and thus deny them that grander heritage of a happy childhood and youth. But the human voice was before any musical instrument, and with or without such aid it can make sweet melody. No amusement brings such pleasant associations as singing, and to be really enjoyed some knowledge of it is necessary. The well-drilled church choir or singing club find not only pleasure and profit for themselves but are a source of enjoyment to others.

But what shall be done with the physical activities of lively young people where dancing is tabooed and musical and literary attractions fail to satisfy? Perhaps the following will answer this question:

"The wicked folks will have lots of fun this winter," said a maiden, regretfully, as she told of several dances planned by the gay in her neighborhood, and which were to her forbidden pleasures. Her listener was a lady much interested in the young people of the place. With abundant executive ability, she had some leisure and a large house at command. "Why are you so anxious to dance?" she asked.

"O, I just love to move to music," was the answer.

Her thoughtful friend pondered over the matter, and as a result a gymnastic club was started. Dumb-bells and Indian clubs claimed the attention of the members that winter, and the maiden who longed to dance enjoyed these exercises just as well. The gymnasium was the large kitchen of the originator, and an accommodating friend gave the music of his banjo. Some of the leisure time of the spring months was given up to the practice of numerous intricate marches and the graceful May-pole dance, and one perfect day in May the club gave a closing exhibition. Field and garden yielded their treasures for this celebration, and a favorite girl was chosen and crowned queen. The club was voted a great success by the old as well as the young, and the members looked forward with pleasure to reorganization the following year.

If all or most of these suggestions could be carried out (and I believe it possible in almost any ordinary country home) parents would find life more enjoyable, and children would not long for other surroundings and occupations.

Aim High.

ALICE CHITTENDEN.

The boy who would rise in life must do two things: First, after earnest thought, consultation, reading and study let him decide upon the calling or profession he would prefer. No matter how far out of reach it may seem. If you are a plowboy and want to be an architect, a civil engineer, or an LL. D., don't sit down and say "All that is too far above me. I am only a plowboy, and a plowboy I must stay." If that is your spirit a plowboy you will stay, and you might do far worse.

Second, after having made your choice, stick to it, keep your purpose ever before you, and bend circumstances as far as possible to that purpose. I don't believe in mind cure to the extent of mending a broken leg, or the eradication of a cancer, but I do believe in the power of mind as applied to one's daily life and business. Desire a thing very much and you will strive earnestly by every means in your power to attain it; if you only want it indifferently, you will not work for it, and most likely you will not get it.

Fifteen years ago a boy of my acquaintance who was then just fourteen years old, decided that he would be an architect. Now this is one of the most difficult of professions for a young man who has neither money nor influence. It requires a deep and practical knowledge of many abstruse branches of learning. My young friend had just graduated from the grammar department of one of the public schools in a large city. There was no present opportunity for further education; it was necessary for him to earn his own living at once. The first position that offered itself was that of boy in an insurance office at three dollars and a half a week. This did not seem a step toward architecture but he filled it faithfully for a year during which time, after business hours and at odd moments, he learned the use of the typewriter, then just coming in vogue, and at home in the evenings he studied stenography. The stenographer of the firm, a lady, married; he offered himself for the position, was doubtfully given a trial, found satisfactory, and at once sprang into a salary of $50 a month. Here he worked along contentedly and faithfully, but with his mind ever on his desire and with his eyes ever open for a chance leading to its fulfillment.

At last a leading firm of architects advertised for a stenographer. He applied for the place, and on account of his very eagerness was permitted to try the work, with the discouraging assurance of one of the principals that it would be impossible for a young man of seventeen to fill the place. It is needless to say that the gentleman was agreeably disappointed. The brave boy not only did the work but took a course of architectural drawing and study in the evenings. At twenty-five he was offered a junior partnership, and to-day one of the greatest firms of architects in the city of Chicago includes the name of my friend.

I tell you this true story for your encouragement, boys. This lad did not possess any unusual genius. He simply aimed high and clung to his purpose, and he was not afraid of work.

Where the Woodbine Twineth.

A pretty fancy is gathering berries and stringing them like beads, and then hanging them up to dry for future ornamental purposes. I have a string of woodbine berries, gathered last year, when the berries were fully grown but were still green; these have shriveled and turned a rich brown, and look as if they were carved. Another string of the same kind of berries gathered when they were purple have dried a handsome dark color, and look like imported rosary beads, only smaller. The red seed vessels of the wild rose make another pretty string, and the brown beans of the locust pod and small green acorns, as well as the ripe ones, are pretty. Altogether, it is amazing to see how many different strings of beads one can take home from the summer outing and hang over the corner of picture frames or on an easel. They are pretty souvenirs of good times in the country.

The Discontented Vegetables.

S. A. CARR.

Sweet, dewy and pleasant were the verdant fields, warmed by the summer sun and wet by the summer showers into rich fertility. Farmer Goodyear's eyes fairly sparkled with satisfaction whenever he viewed his "dirty acres" and noted the neat rows of thrifty vegetables, soon to be turned into the silver and greenbacks of the republic. But, alas! not so content were all the objects of his admiration.

"Ah me! ah me! How deplorable is my fate!" groaned a fine large head of cabbage. "To be thus bound, root and tendril, in a dull corner of a stupid kitchen garden and given over as a prey to green worms and fuzzy caterpillars! I, whose ancestors were worshipped as gods by the wise old Egyptians, and of whom one Cato was clever enough to say: 'The cabbage is a panacea for the ills of man.'"

"True words are those, Dame Cabbage," sighed a neighboring turnip. "Low, indeed, have both our families fallen. The turnips of Thebes were once vaunted far and near and were dearly loved by the cultured Athenians; while now, the turnips of America are rather looked upon with contempt and classed with those disagreeable onions, mad parsnips, jaundiced carrots and other common garden truck."

"Ho, ho!" sputtered a slim, yellow chap near at hand, while a tuft of green leaves that adorned his head quivered with indignation. "Does a turnip dare to turn up his nose at a carrot! Let me inform you, sir, that my forefathers were not only distinguished by the ancient Greeks, but by the Romans as well; and we are not only considered useful but ornamental also. Several of my cousins have been filled with water and hung in parlor windows where they were much admired as floral decorations; which is more than either you or Madam Cabbage can boast."

"Vrouw cabbage, if you please, and it ought to be von cabbage," snapped the solid, round head haughtily. "In modern times we are Knickerbockers, having been brought here direct from Holland, and only the other day I overheard a college professor telling Farmer Goodyear that we were also introduced into England in the sixteenth century by a Sir Anthony Ashley, of Dorsetshire. We are nearly connected, too, with the aristocratic cauliflowers, some of whom I trust I may meet when we are carried to the market—that bourne, from which no vegetable returns."

"Ha, ha, ha!" chuckled a mellifluous voice behind the trio, and twisting their necks as far as Nature would permit they beheld a genial, if rather coarse, pumpkin shaking his golden sides with merriment. "What trash you talk," he cried. "Who cares a dewdrop where his seed came from if he can only grow sweet and hearty, make good pies and fulfill his destiny by not disappointing the eater."

At this last much dreaded word the cabbage, turnip and carrot trembled visibly, and a chorus arose upon the mellow autumn air, "Oh, for feet, for feet with which to escape from this humdrum spot and our impending fate!"

"Hush, hush, ye discontents!" came in stern tones, which all recognized as those of Mother Earth. "Why do you not know when you are well off? But hearken! You shall have your desire and all three be given the 'curse of a granted prayer.' To-night at midnight I will cast you from my arms; the goblins of the air shall furnish you with means of locomotion, and until cock-crow thou may'st travel wheresoever thou wilt."

Oh, joy! joy! At this promise the "swells" of the garden, as they considered themselves, were overcome with delight, and the clapping of their little leafy hands made the farmer think the wind was rising.

"To be blessed with limbs as well as a head will

be bliss indeed!" laughed the proud Knickerbocker. "And, who knows, but I may be taken for a cabbage rose!" while all three eagerly awaited the hour of twelve.

It came in due season—the witching hour—and the strokes of the village clock had scarce died away when the whole field was shaken, as by a slight earthquake. It was naught, however, but the great mother tossing her ungrateful children from her loving breast. Breathless they lay for a moment, panting upon the ground, but at length gathering themselves up and finding themselves endowed with arms and legs, gaily nodded farewell to their slow, plebeian companions and set forth to seek a higher position. But only the turnip was strong enough to walk alone. Robust vrouw cabbage and the somewhat weakly carrot were obliged to support their faltering steps with tiny staffs plucked from the hedge which protected their native beds.

And so, without a pang of regret, they left the old home-lot, trotting gleefully off to the farm house, where they scampered over the farmer's pillow on a frisky nightmare and then, as strength increased, capered down the highway, thirsting for new sights and scenes and pastures fair. Everything was novel and delightful, and all went well until prompt chanticleer announced the coming of the morn. Beautiful morn, clad in crimson and amethyst and gold! Usually the vegetables greeted her with supremest rapture, but now her warm, caressing rays withered their leaves and sapped their juices.

"My head spins! I am giddy!" screamed the cabbage, dropping heavily by the roadside.

"Alack! alack! I droop, I faint!" wailed the turnip, following suit; while the poor, lean carrot collapsed without a word and lay with his brand new toes turned up to the skies and his feathery topknot trailing in the dust. And hour by hour the relentless sun climbed higher and higher in the heavens and beat down ruthlessly upon the unhappy rovers.

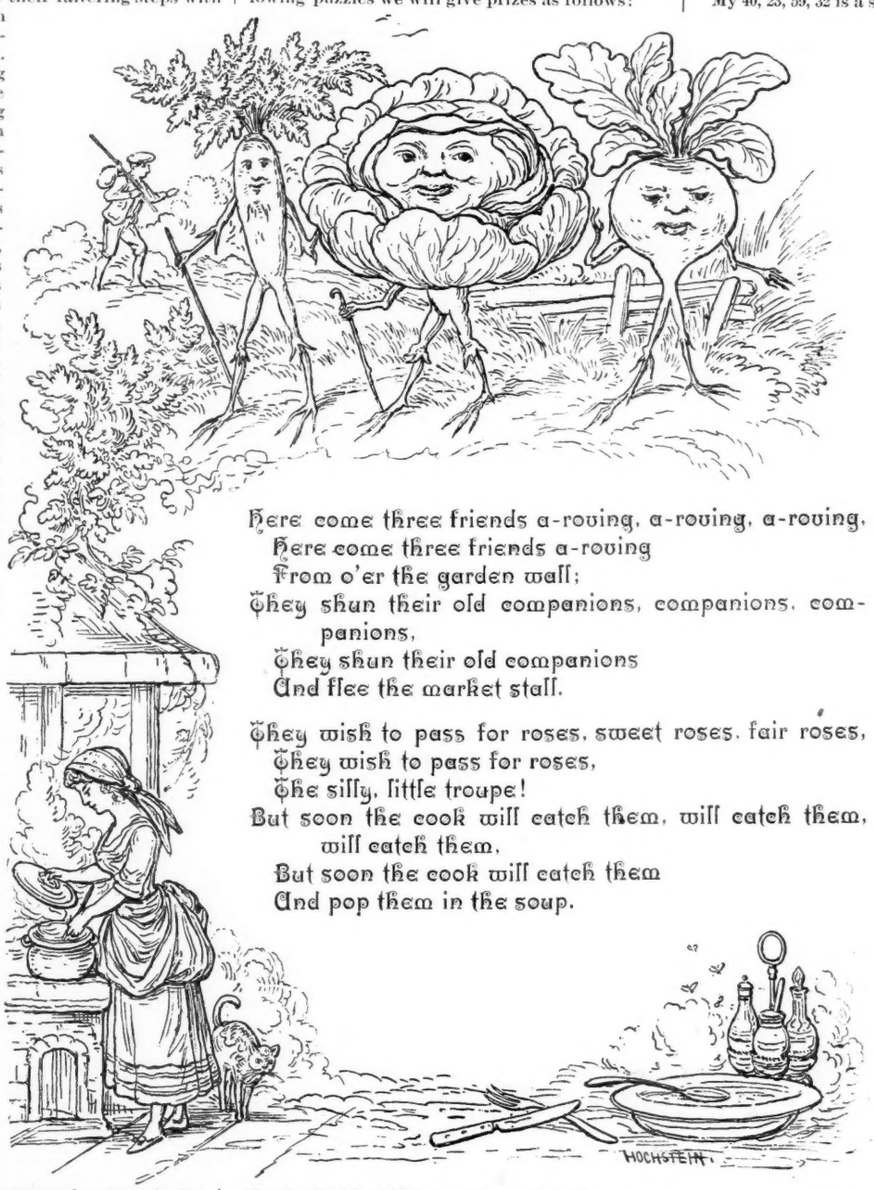
Up the road came Tommy Tucker with a sack on his back, but never a penny in his pocket. "I will have to sing for my supper this night for certain," thought he, "and much I fear the tune will be the one the old cow died of, which every one knows was starvation." Suddenly, however, he uttered a little cry of surprised delight. He had spied the garden truants, now fast entering the "sere and yellow leaf."

"By the great Mother Goose, here is a capital prize!" shouted he, and in less time than it takes to tell the cabbage, the turnip and the carrot were whipped into his bag and on their way to a wee bit of a cottage under the hill.

"Oh, ho, Miss Muffet! Oh, ho!" trilled Tommy, and out tripped the daintiest of little maidens that was ever frightened by a spider, closely followed by a gray cat whose gooseberry green eyes grew large as saucers at sight of the ambitious vegetables.

"They are too wilted to boil, but I will make you a savory stew," quoth Miss Muffet, and in a twinkling the trio was popped into a large pot that hung over the fire and was soon bubbling merrily.

"Oh, that we had been contented to remain in the dear, fresh home-lot," they sobbed, and it seemed the very irony of fate when, as once the tiny housewife lifted the lid, they saw little Jack Horner come capering in, bearing their former companion, the cheerful pumpkin, but how transformed! Eyes, nose and mouth now adorned his jolly, round face and, with a taper in his head, he was raised to the honorable position of first Jack-o-lantern to King Halloween, while, alas, they were all in the stew.


Here come three friends a-roving, a-roving, a-roving,
Here come three friends a-roving
From o'er the garden wall;
They shun their old companions, companions, companions,
They shun their old companions
And flee the market stall.
They wish to pass for roses, sweet roses, fair roses,
They wish to pass for roses,
The silly, little troupe!
But soon the cook will catch them, will catch them, will catch them,
But soon the cook will catch them
And pop them in the soup.
HOCHSTEIN.

Our Puzzle Column.

For the first five best lists of answers to the following puzzles we will give prizes as follows:

For the first best list a watch, worth $4.00.

For the second best list Stanley's Wonderful Adventures in Africa, worth $2.00.

For the third best list a gold-lined silver-plated cup, worth $1.50.

For the fourth best list an AMERICAN AGRICULTURIST microscope, worth $1.00.

For the fifth best list a mineral cabinet, worth eighty-five cents.

These prizes will be forwarded prepaid to those who send the first five best lists of answers. We do *not* offer prizes for every list sent in, but only for the first five best lists. Answers must be mailed on or before the 20th of this month to "Puzzle Editor," AMERICAN AGRICULTURIST, 52-54 Lafayette Place, New York.

18. A NAME THAT EVERYBODY HAS HEARD.

Five-ninths of a Christian
And half of a tool,
And the last part of something
That's practiced at school;
A term for a firm,
And a rhyme for a thumb,
Three-fifths of a rebus:—
Now pick out this plum!

19. DROP-LETTER PUZZLE.

—I—E—A—O—I—A—.

20. SQUARE WORD.

Stubble of grain; a genus of birds; a descendant of Mahomet; pilgrimage to Mecca.

21. NUMERICAL ENIGMA.

I am composed of 59 letters;
My 47, 37 is a note in the musical scale.
My 40, 23, 59, 32 is a sound in music.
My 15, 34, 39 is the name of a woman.
My 45, 50, 6, 27 is air in motion.
My 38, 2, 19, 17, 33, 42 is a village in Palestine mentioned in the Old Testament.
My 16, 52, 28 is loved by most old ladies.
My 20, 46, 12, 14 is a flower.
My 31, 18, 51, 56, 30 is a city of France.
My 7, 41, 35, 36, 8, 24 was a president of the United States.
My 43, 29, 21, 53 is a low cart.
My 4, 25, 49, 48, 10 is a bird.
My 3, 11, 44, 26, 57 is one of the United States.
My 1, 54, 13, 5, 9, 22, 55, 58 was a noted discoverer.
My whole is a promise given by the Master.

22. ARITHMETICAL.

A and B have equal sums of money; A loses one-third of his money and B gains $100; B then has three times as much as A. How much did each have at first?

ANSWERS TO THE JULY PUZZLES.

12.—Harriet Beecher Stowe.

13.—Unwarrantableness.

14.—
What though no laurels grow his grave above,
And o'er his name no sculptured shaft may rise?
To the sweet spirit of unselfish love
Was not his life a glorious sacrifice?

15.—
1	15	14	4
12	6	7	9
8	10	11	5
13	3	2	16

16—Shakespeare in "A Midsummer Night's Dream."

THE PRIZE-WINNERS.

First prize, Margaret Lee, Mitchell, Ind.

Second prize, N. Arthur Lawrence, Hustisford, Wis.

Third prize, David Himrod, Sterling, Kan.

Fourth prize, Harry C. Warner, Dixon, Ill.

Fifth prize, C. W. Clark, Skaneateles, N. Y.

WHAT ONE PUZZLER SAYS:

While the men are at "the other place," the hawks sail away with what ought to be fried chicken,—the sap-suckers and jays suck the nectar from the late oranges, eat the honey peach and Kelsey plums, destroy the tomatoes, and we go to bed luxury-hungry. It makes one feel murderous enough to work for rifles, and hope we may be fortunate enough to get *one*. A. C. R., Florida.

Gardening by Women in Germany.

Most American travelers in Germany go to the principal cities, see as much sights of art, architecture and scenery as possible, and return without having the chance to stop on the waysides, and learn of the real home life of the people. No existing guide books lead to such roads. Mecklenburg Schwerin, with its little sister State Strelitz, is only twenty-eight German miles long and fourteen broad, but is one of the most fertile agricultural districts existing. The finest breeds of farm animals, the richest crops of grain, fruit and grass are raised here. Husbandry in all its branches is studied from long experiences, and when we consider that all farm land has been for centuries under cultivation, with no loss of productiveness, we see that there must be some reason and effort which keeps it up to so high a standard.

Every family has a garden, and the work in it is done exclusively by women. In the villages where a minister resides, who always has a big farm to cultivate as his support, his wife is the leading spirit in the garden. In other places, perhaps the wife of schoolmaster or forester takes the lead. Often there is a friendly contest to see who shall have the first peas and carrots for the table; of course everything grows in open air. On Whitsunday all try to have the first lettuce, and if possible a young chicken or pigeons for dinner. Generally the garden is close to the house; when surrounded by a stone fence the main path runs in the middle. If a green hedge incloses it, the paths run all around next to it, because close to the hedge nothing will grow. All beds are laid out in straight lines, no turf whatever. Garden land may not be wasted and grass grows in the meadows. Along the main walk on both sides are beds about five feet wide called rabbats. At each end is generally a clump of lilacs or cherries. Rose, currant, and gooseberry bushes are planted at intervals in the middle of these beds, and are trained to resemble little trees. This leaves room for diverse perennial flowers underneath. Gooseberries grow to excellent size and flavor. For Easter they have the first shives, and as the season advances each variety, as it matures, is greeted with delight and thankfulness by the family. Asparagus is one of their favorite vegetables. It is grown in raised beds, and cut three times daily for fear that the heads of it turn blue or green when exposed to the sun. They like it white. Green long shoots are not eaten. Beans they have, but they prefer a long, very fleshy pods to Lima, as the latter is almost unknown, as are also sweet corn and tomatoes, except at the rich domains where gardeners are employed. Of peas they have, besides other kinds, very large pods bearing, called "sugar pea," which is cooked whole like string beans. Parsley is raised in two distinct varieties, the curly for decorating, the plain for its roots, which are used in soups. Of celery the turnip-rooted is only known and prepared, when cooked, for salad and soup. An immense amount of different sweet herbs, for use in the household, always find a place. Caraway seed is cut twice during the season. The broad bean is grown in single rows between the potatoes. Pear, plum, and apple trees are distributed all over the farm in single specimens. Orchards of one kind are seldom found. Peach, apricots, and grapes are grown on trellises in some protected spot, or on the south side of a house or barn. Onions, carrots, turnips, and similar crops are sowed broadcast on the beds; children and old women do the weeding. Particular stress is laid on such vegetables as can be preserved for the winter, either in mature natural state, or dried. Nothing is wasted, even the rose leaves are gathered, before dropping, and exchanged at the drug store for something necessary. Privet hedges are very much valued, and on a certain time a long blue and green-looking fly appears, which feeds on the leaves. It is the Spanish fly, the children are eager to pick them off and sell them; they are used for making fly blisters. The gardens of the more wealthy people and nobleman's estates are laid out in English style, with curved walks and the turf dotted with beautiful flower-beds. The ladies are all good housekeepers, take a personal interest in all matters, oversee the garden and help, often gather the vegetables for dinner. All summer, in fair weather, before and after school hours, women and ladies too, accompanied by their servant girls and children go, with little handbaskets or wagons containing a lunch, a-gardening; they work, enjoy outdoor life, fresh air, and healthy recreation.

WILHELMINE SELIGER, Mecklenburg, Germany.

Asparagus Culture in France.

Paris has a great many mouths to feed, and the work of supplying even the minor articles of food gives employment to quite an army of gardeners and farmers. The single article of asparagus is a notable example. The supply for the Paris market is chiefly grown in the valley of Montmorency and at Argenteuil. In the vicinity of the latter village, a few miles from Paris, 3000 persons are employed in the culture of asparagus.

The seed is sown in February and March, in beds of soil carefully prepared and fertilized the previous autumn. These beds are about two feet apart, and the intervening space is utilized for the first year or two to grow early potatoes, or beans. For the same period it is necessary, in addition to frequent weeding and pruning in order to get rid of noxious growths, that a strict watch be kept upon the young plants that they may be protected from the voracity of the insect which eats the stems and swarms at times in such extraordinary numbers that the plants actually bend beneath the weight. The mode adopted for getting rid of these insects is to go round with a tin can and place it under the plants, which are then shaken. The insects fall down into the can and are put into boiling water, the great thing being to do this before they lay their eggs. In the third and fourth year, if the plantation has done well, a few heads will probably be gathered; for I should have said that French growers do not speak of "cutting" asparagus, but of "gathering," the knife being only used when the action of the hand is not sufficient. It is not, however, until the fifth, or even the sixth, year that an asparagus bed is in full growth, when the crop may be expected to continue from six weeks to two months. An asparagus bed will last for fifteen or twenty years when properly cultivated and looked after, the annual yield being at the rate of nearly four tons per acre. The asparagus is gathered in the early morning, while the dew is still on it. It is then bundled and kept in the growers' sheds till the late afternoon, when it is sent into the Paris central markets, where it is sold by auction to greengrocers, hotelkeepers, and others buying upon a large scale. There are bundles of different sizes, so that it is impossible to give any idea of the prices paid, especially as these vary very much according to the time at which the asparagus is put into the market.

Argenteuil and other villages around Paris are not the only places where the cultivation of asparagus is carried on upon an extensive scale. In the Burgundy district asparagus is cultivated as an agricultural rather than a garden product. Asparagus of good quality is grown both in Algeria and the South of France. The Algerian asparagus comes to market in March, while the Argenteuil beds and those in other places around Paris may be regarded as ready by the beginning of May.

D. P. CHESTER, Paris, France.

From Missouri to Colorado.

Missouri is a grand old State; but, for reasons I need not here detail, I left it for a new home in Colorado, and have taken up my residence in an agricultural region. We arrived on the morning of the 14th of February, and, as soon as my family were disposed of for their temporary comfort, I began to survey the field with a view to the organization of a school district. I found that within forty-eight hours preceding and including my arrival no less than nineteen persons had come into the neighborhood, which now numbered twenty children of school age. Hence, I sought an early interview with the county superintendent of public instruction to secure the organization of a school district. I am now happy to state that arrangements will be made for a school in the early summer.

This will one day be a grand country. Under irrigation it is converted from a desert into a blooming garden. I have never seen a soil so fertile in its general appearance as this. And yet the same blunder will be committed here that is perpetrated in all new countries. Settlers are wantonly impoverishing the soil. In spite of the teachings of experience and the crying voice of Nature, farmers will outrage the soil and proportionately impoverish themselves.

A. H. MULKEY, Bent Co., Col.

The Texas Panhandle.

The Texas plains are unsurpassed for scenic grandeur. The flowering grasses growing on them wave and quiver in the wind like the ripple of the waves, and the clumps of trees are dotted about like islands. Here and there the islands are grouped into archipelagos, and the arms of the prairie surrounding them fork out and unite again like arms of a grassy sea. One single prairie is often so vast that as far as the eye can reach not a tree can be seen, and then again the clumps of trees follow one another in rapid succession. Along the Texas and Pacific railroad are about 3,500,000 acres of land granted by the State to this road comprising some of the finest land in a most beautiful portion of the State. They are all adapted to stock-raising, fruit-growing or farming. The eastern portion of this section is particularly good, fruit-growing and farming may be extensively carried on without irrigation. It is well watered and exceedingly fertile. The rainfall averages from twenty-five to thirty-five inches yearly and good crops are grown five years out of seven. The land consists of a series of prairies rising to the westward from one hundred to two hundred feet. The soil is a sandy loam, black in some places, chocolate brown, or a bright red in others, all exceedingly fertile, as was testified by the growing crops thereon. The products are cotton, corn, oats, wheat and fruits. Water for household use is obtained from wells from thirty to sixty feet deep. Considerable timber may be found especially along the banks of the streams. The elevation is from 750 to 2,297 feet, and is considered very healthy.

Traveling westward between the Colorado and Pecos rivers we cross 1,000,000 acres of this same land grant, located in fifteen counties, and while not as favorably situated as the eastern portion still presents many advantages to the home seeker. The greater part of this section is devoted to the raising of horses, sheep and cattle. Farther west the grant covers a portion of the Llano Estacado or Staked Plain. Here irrigation is necessary for farming, and the principal occupation of the people is stock-raising. Water may be obtained from ten to one hundred feet down, and several tracts cultivated in fruits show satisfactory results. The altitude is greater and it is notably healthful. Twenty thousand acres have already been placed under irrigation in the past year. The trees and vines are in a flourishing condition, and from two to four crops are grown yearly.

This section is a part of what is called the Panhandle of Texas, and consists of prairies intersected by broken country containing rugged hills and gorges. The prairies are covered with a variety of rich grasses, among which may be mentioned the mesquite and gramma, blue stem, bunch, sedge and buffalo. The ravines contain pools and streams of water, which seldom dry up. At July 15th corn was already in shock, and from almost every station fruits, watermelons, cantaloupes, peaches and grapes, tomatoes, cabbages and other vegetables were shipped.

A. B. HULL, Panhandle, Texas.

Jamaica's Wealth of Fruits.

Jamaica is probably as rich in fruit trees as any island of equal area on earth, and considering that few of them are indigenous, and were introduced at various periods by different persons, the rapidity with which they have spread and the exuberance of their growth closely approach the marvelous. The display of these fruits at the recent Exposition in Kingston was most interesting to every lover of pomology or arboreal botany, as it embraced almost every variety grown between Florida and Brazil, Spain and the Cape of Good Hope.

The orange, grape fruit, shaddock, lime and lemon grow as well in Jamaica as in Florida, and are said to bear fruit in two to four years from the seed; whereas, it requires from eight to twelve years for a seedling orange to bear in our so-called "Italy of America." Bananas bear fruit in from twelve to fourteen months after being set out; mangoes in four years; cocoanuts in from five to

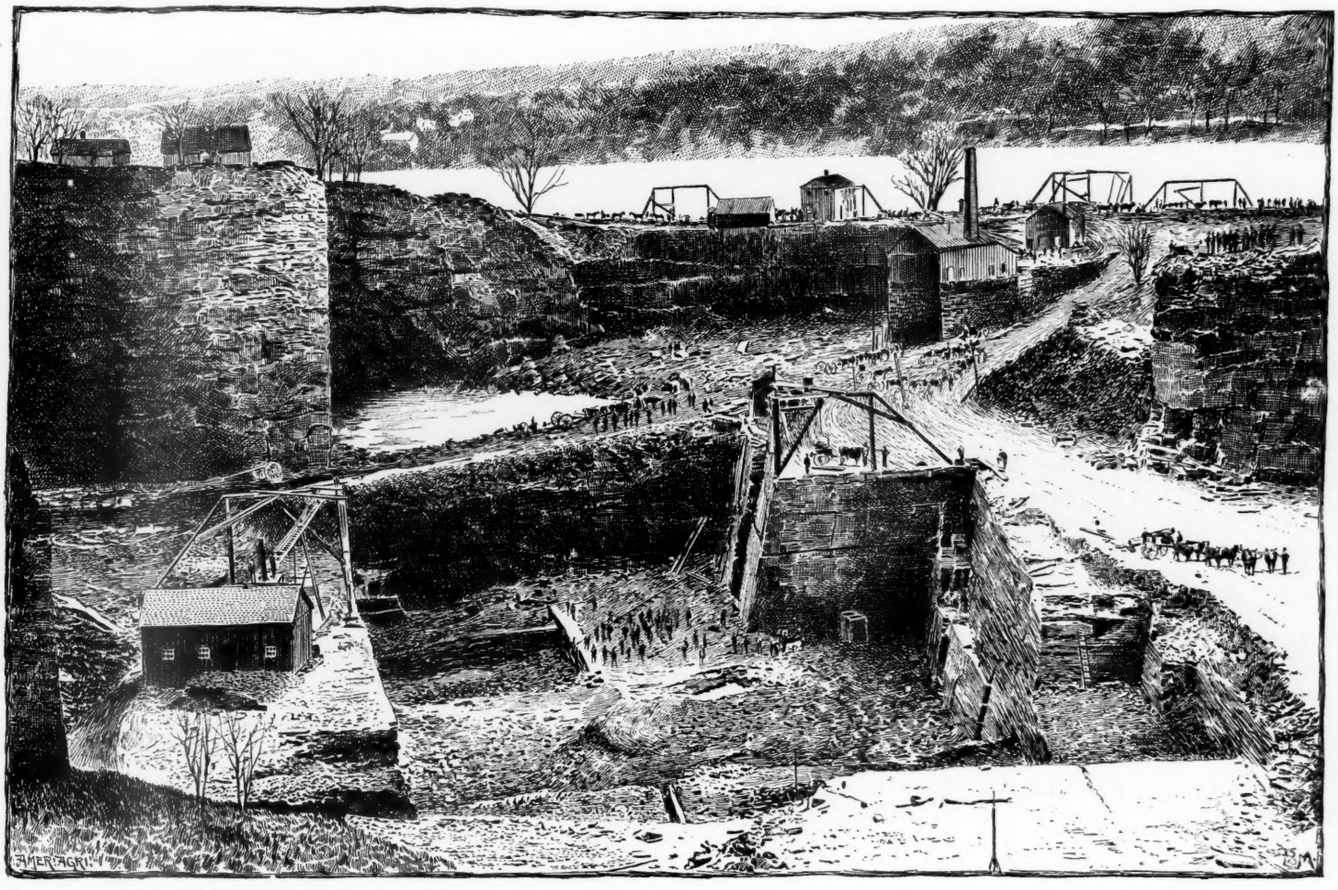
seven; and dates in about six years; owing to the warmth and equability of the climate, the abundance of invigorating sea breezes and the fertility of the soil.

Fertilizers are rarely used for even the most exhausting crops, and fruit trees receive little or no cultivation, everything being left to nature. The Boston Fruit Company, which has about 200,000 acres of land on the island, is now experimenting with fertilizers and tillage on its banana plantations, and the result is said to be satisfactory. This company devotes most of its attention to growing bananas and cocoanuts, buying its citrus fruits from small cultivators.

J. M. MURPHY, Kingston, Jamaica, W. I.

A Connecticut Sandstone Quarry.

On September 4, 1665, the town board of Portland, Conn., gave permission to some parties interested in such work to quarry sandstone in that town. The stone proved valuable, and the demand increased till the board considered it expedient to prohibit all but town residents from quarrying



PERSPECTIVE VIEW OF A CONNECTICUT BROWN-STONE QUARRY.

lest the deposit should become exhausted. Two hundred years have passed, and to-day the supply seems no nearer its limit than it did to that provident board of managers. It is the largest quarry in the world; is worked by three companies, employing more than one thousand men, with steam derricks, pumps, drills, and other labor-saving devices. The open working is now one hundred and sixty feet below the surface of the earth, and a diamond drill driven three hundred and twelve feet still deeper fails to find the bottom of this deposit.

Commercially the product is known as the "brown-stone" so extensively used for house-fronts in New York and elsewhere. Geologically it is red sandstone, and is interesting from the record it preserves of the vegetable and animal life existing at the time of its formation. Once it was the sandy bed of a great lake. Trees were embedded in the oozy sand, and after they had rotted entirely away the space was filled with other sand, and thus a perfect cast of that tree exists to-day. Shell fossils of the species found in limestone formations are not met with here, but higher forms of life are very abundantly shown by footprints at various depths of the quarry. At one point, more than one hundred feet below the surface, a succession of tracks could be traced for forty feet, showing where some animal had walked. On a huge quarried stone were two imprints which appeared at first sight as if the animal was standing still with both feet close together, but closer inspection showed them to be two imprints of the same foot, as a break or round of the nail of one toe was distinctly visible in both cases. Around were marks of smaller feet, describing the restless patterings of smaller animals.

In the work of quarrying horses are used for the dirt carts and other work where time is of the most importance; but where care means money then we find the oxen employed. Ten or twelve yokes of the finest and largest of oxen may be seen attached to a cart to which is slung a block of stone weighing many tons. An unsteady movement would cause damage and loss. The massive creatures pull their burden steadily up the slope to the riverside as trusty as steel, and so patient and kindly disposed that their owner knows that they may be trusted. The proprietors of the quarries illustrated herewith have walled in the river to keep it from flooding their works, as it once rose to within eight inches of the top.

G. S. ROBERTS, Middlesex Co., Conn.

American Homes Good Enough.

The AMERICAN AGRICULTURIST shows up promptly every month. It is a splendid publication. I would feel lost without it, as it contains so much valuable information; each number is worth a year's subscription. Farmers have a great deal to contend with in Queensland. It has been reported here that a stream of emigrants is starting from Kansas for Queensland. I wish to put in a solemn warning to any American farmer who contemplates the breaking up of a good home with the expectation of bettering himself here. We have had the best season on record, and heavy crops, but there is no demand for them, and railroad freight is higher than ever. The all-absorbing topic now is the shearers' strike, which I should not be surprised to see end in civil war. With every day it becomes more evident that our people are growing tired of being held in the maternal leading strings, and some of our papers are openly declaring in favor of this country becoming known to the world as the "United States of Australia." Long life and prosperity to the AMERICAN AGRICULTURIST.

"OLD BILL," Cedar Vale, Queensland.

The Most Northern Farmer in America.

I am the most Northern farmer in America, a thousand miles by dog-train in winter to reach the government postoffice on the outskirts of Northwestern civilization. Do not wonder if mails are slow and I do not get one-half my papers; some one gets them.

Money is not known here. We have in spite of our latitude, fifty-nine North and the same longitude as Salt Lake city, one of the finest and most agreeable climates north of latitude forty. All common grains do well, wheat excellent. Vegetables are unsurpassed by anything I saw in the East. I weighed six field turnips last fall that turned the scales at one hundred and ten pounds. The heaviest was twenty-two and one-half pounds. It is not unusual that we can pick from the pile of potatoes fifty that would weigh 100 pounds. It is a splendid country for horse-ranching. Cyclones, blizzards and hail storms are not known. I have been here eleven years, with only one poor crop.

E. J. LAWRENCE, Peace River, N. W. T., Can.

Cape Colony Enterprise.

The district of Barkly East, Cape Colony, is one of the most rainy localities in South Africa, rain falling to the extent of about forty inches a year. The district is full of streams, which are impassable after every heavy rain, and yet there is not a bridge in the whole district, and the roads are about the worst in the world. Sometimes as many as four ox wagons will be stuck at one side of a big mud hole for several days. So much for Cape Colony enterprise.

The railway management of Cape Colony, which is in the hands of the government, is atrocious. Fancy wagon after wagon laden with heavy goods and drawn by oxen moving along by the side of the railroad and competing successfully with steam. WILLIAM MCSANDRUM, Cape Colony, S. A.

FARMING IN FOREIGN LANDS.

In Great Britain land bears ten and one-half per cent of taxation, while in France it bears twenty, and in Hungary thirty-eight per cent.

The French Superior Colonial Council has decided in favor of concessions of colonization companies being granted by simple decree and not by law,

The population of New South Wales, Australia, according to the census returns, is 1,134,000, exclusive of Chinese, being an increase of 382,600 since 1881.

Three steamers from Syria and Egypt recently unloaded at Marseilles, France, 400,000 eggs, 107 casks of yolks of eggs, and 725 baskets of fresh tomatoes.

It is stated that in Sicily pigs are used as the scavengers of the towns, where they eat the filthiest of street refuse, over which a little bran has been spread.

The harvest prospects in Russia have not been favorable and it has been proposed to prohibit the export of grain should the yield prove insufficient for home consumption.

Red water now prevails among cattle throughout a great part of the northeastern districts of Cape Colony, South Africa. A very large number of deaths have occurred.

Patagonia is the most recent addition to the list of frozen-meat exporting countries. The country is said to be well adapted to the breeding of the hardier descriptions of English mutton sheep.

Montreal cattle shippers this year have been exporting vast quantities of hay to Glasgow, Scotland, at a good profit. Hay costing $8 a ton in Montreal and $6 freight brings $20 in Scotland.

In India there are 8,000 children learning the English language because it is far easier to teach these children through the influence of English literature than to attempt to translate that literature into Hindu.

Up to the beginning of last year $15,000,000 were invested in Indian tea companies, and since then new companies representing a further capital of $3,125,000 have been formed. China is fast losing her hold on the tea trade.

Six thousand rose growers and laborers around Paris were ruined by the severity of last winter, and they intend to petition the government to obtain them credit for several months, until they can recover from the disaster.

School gardens, of which there are more than 8,000 in Austria, are being laid in different parts of Germany. Their object is to give methodical instruction in the cultivation of fruit trees to be used in the teaching of botany.

A sugar fifteen times sweeter than cane sugar and twenty times sweeter than beet sugar has been extracted from cottonseed meal by a German chemist. But it cannot be manufactured in competition with the ordinary article.

A herd of half-bred bison exists in England. The animals are descended from American bison imported several years ago by Viscount Combermere and crossed on British cows. The half-bison beef has always sold at the highest prices.

The strength of spider silk is almost incredible. Size for size it is considerably tougher than a bar of steel. An ordinary spider's thread can bear a weight of three grains, while a steel thread of the same thickness can support less than two.

The governor of Victoria, Australia, has arranged to have practical ensilage-making tests carried on in the Government House grounds, by which it is hoped that Victorian farmers will be interested and make similar experiments for themselves.

A society has been formed in Oldenburg, Germany, to promote the breeding of the well-known Oldenburg coach horse. The great object of the society is to found a pedigree book for all such horses in the province and in Hanover and Bremen.

English breeders of Dorset horned sheep have taken steps to organize themselves into a society and establish a flock-book for the breed. When this is accomplished these sheep will be entitled to free entry to the United States for breeding purposes.

The cultivation of sugar cane in Jamaica shows as steady a decrease as that of bananas does an increase. The cause of the abandonment of the sugar estates is attributed to the low price of sugar, and in some cases to the difficulty of obtaining labor.

Fruit-growing on irrigated lands in Victoria, Australia, is having marked success. From sixteen acres of vines twenty-two tons of raisins were made last season, and the effect of irrigation on fruit trees which are just coming to maturity is highly satisfactory.

A pony mare, believed to be about thirty years of age, dropped a foal recently on the farm of Mr. Nicol, of Blackbog, in the Fyoie district of Aberdeenshire, Scotland. So far as known this is the first foal ever borne by this aged dam. Both parent and offspring are doing well.

In Paris it has been found that the trees have suffered even more terribly than was suspected from the exceptionally severe and protracted frost of last December and January. In the Tuileries Gardens especially the damage done to many of the finest trees is irreparable.

In Germany and some other parts of the continent of Europe cherry trees are commonly planted by the roadsides. Any passenger may eat of the fruit except that about which the owner has bound a wisp of straw in token of reservation, which intimation is universally respected.

In Australia the desiccation of potatoes is a new industry. The potatoes are sliced and dried, all the moisture being extracted. About one ton of desiccated potatoes is obtained from five tons of the raw article. A good market for the product is expected among the steamship companies.

Irish harvest hands are swarming into England at this season, no fewer than 4,000 being shipped from Dublin on one day recently. The men are said to be mostly stalwart young fellows, contrasting remarkably with those going over for the past few years, who were principally old men.

In France, last year, a syndicate of sugar manufacturers organized an exhibition of machines for lifting beet roots, but, as it did not bring about the desired results, another is to be held this year. The sum of $1,200 is to be divided into three prizes for the most perfect implements for this purpose.

The French Chamber of Deputies passed, recently, a bill authorizing the government to lay up a stock of grain in each of the fortified towns sufficient to feed the civil population for two months in time of war. A portion of the outlay will be charged to the municipality of each of these towns.

The Salvation Army have purchased and equipped a fine buck-wagon with full tent, and a span of eighteen oxen, and have dispatched an expedition comprising six "army" officers into Mashonaland, South Africa, to look at the prospects for the agricultural and pastoral development of that region.

Eight boxes of butter made at the Ballarat, Victoria, Juvenile Exhibition and forwarded to London, England, brought $28.50 per cwt., and is reported to have closely approached in quality the best Danish butter. Other Australian butter included in the same shipment only brought from $23.50 to $27.25 per cwt.

A conference held in Auckland, New Zealand, between the representatives of the frozen meat trade and the shipping companies has resulted in an agreement on the part of the latter to reduce the freight between New Zealand and England to two cents a pound at the end of the present year. This means a reduction of about $500,000 annually.

An enumeration of the mushrooms and toadstools known to scientists has just been made by Dr. M. C. Cooke, of London, England, which shows that 4,600 species of these fungi are already known. Of this number 1,400 are found in the British Islands; but of the total only 134 can be relied on as edible, while thirty are decidedly poisonous.

The agitation in Berlin and in the provinces consequent upon the dearness of provisions continues unabated. Dr. Miguel, the Minister of Finance, is reported to have stated that but for the negotiations with other Powers for commercial treaties the attitude of the German government in regard to the question of repealing the corn laws would have been different.

In accordance with a representation from the chief cattle exporters of the Dominion the government has fixed two feet eight inches as the standard space per head for live cattle on shipboard, thus making the standard uniform with that adopted in the United States. Orders have been given to the Canadian inspectors to enforce the new regulations forthwith.

The preliminary estimate of the wheat crop of South Australia, issued by the government, puts the area reaped at 1,753,032 acres, or 89,929 acres less than in 1890, the decrease being mainly due to wheat injured by rust and locusts, and consequently cut for hay. The yield is estimated to be 10,513,890 bushels, or 4,063,468 less than last year, the average yield per acre only being about six bushels, or but little over three-fourths what it was in 1890.

The Danish Society for the culture of heaths, with the support of the government, is rewooding one hundred square miles of heath in Jutland. The work was begun in 1886 with one square mile. The society now numbers 14,000 members and is enthusiastically supported by communities and private individuals. Last year it purchased plants to the value of $16,000, and about $67,000 are annually expended for planting and cultivation of heaths.

The director-general of forests of New South Wales, Australia, is devoting considerable attention to the red-gum forests of the Murray river flats. About 250,000 acres between Albury and Moama are well timbered with redgum, and over nearly the entire area there is a prolific growth of saplings which have sprung up within the last ten or twelve years. In many places these saplings are so thick in the ground that it is impossible to ride through the scrub.

At a recent meeting of the National Agricultural Society of France, M. Baudrillart brought forward the subject of the compensation of out-going tenants for their improvements, advocating it at considerable length. After some discussion the Society rejected in the name of the freedom of business the principle of the intervention of a special law tending to regulate the indemnity to a quitting tenant on account of advances which he has made in the course of his lease on rented land.

It was reported at the Co-operative Congress at Lincoln, England, recently, that 1,554 societies had 1,117,053 members, share capital of $61,309,760, and investment of over $31,250,000. The sales for the year, of over $215,000,000, showed a profit of more than $20,000,000. Why cannot our own farmers, mechanics, and other industrial workers combine their small capital in these various co-operative enterprises and thus make and save money for themselves just as their British cousins are so successfully doing.

A plague of mice is feared in the Rodney district, Victoria, Australia. The little rodents are to be seen in thousands. They do great damage, especially in seed time, when they eat a very large quantity of the grain after it is sown. They prefer the open fields to the barns for making their nests, just as our own Western prairie mice do, and when the ground is plowed or scarified they come out in great numbers. An enormous amount of damage was done by mice in South Australia last year.

Of the 11,000,000 square miles of Africa only 2,500,000 remain in the hands of the native rulers. When the native races either become more civilized or are more thoroughly subjugated by the Caucasian races the vast and infinitely varied agricultural resources of that great continent will be rapidly developed. That the native races will be eventually crowded out of existence, as our Indians have almost been, is not likely, since these races have a natural increase from two to four times as great as the Europeans who have formed colonies there. In due course the power of African governments and of African money will be felt among the nations, as was the case in ancient days.

Considerable olive oil is manufactured in Northern Persia in the province of Gilan. There are about one hundred thousand olive trees and these produce from six to nine pounds of olives yearly. Only about seventeen per cent of the weight of the olives of good oil can be obtained by the Persian presses. This gives a crop of about one hundred and twenty-seven thousand pounds. After the good oil is extracted, the olives are pressed again and the oil is used in making soap. The residue is used as a manure around the trees. The oil, at Resht or Teheran, is worth about one shilling and two pence per bottle of two pounds after a good harvest, and about three shillings after a bad harvest. A government tax of one and a half pence has to be paid on every olive tree.

SCIENCE IN FARMING.

Michigan's Great Teacher.

WILLIAM J. BEAL, A. B., M. S., Ph. D., Professor of Botany in the Michigan Agricultural College, was born in Lenawee County, Michigan, March 11, 1833, of Quaker parents, his father being a farmer. He prepared for college at the Raisin Valley seminary, and afterward entered the classical department of the University of Michigan, from which he was graduated in 1859. The two following years were spent in teaching in an academy at Union Springs, N. Y., but, still unsatisfied with his attainments, Professor Beal went to Harvard College to study under Dr. Asa Gray, Agassiz, and Wyman. Returning to Union Springs he continued teaching there until 1868, when he accepted the professorship of Natural History in the Chicago University. During two years he lectured in many places throughout the West, and began laying the foundation of a reputation for scientific attainments that has increased and broadened with each succeeding year. Since 1870 Professor Beal has been connected with the faculty of the Michigan Agricultural College, and it is during this score of years that a large part of his permanent contributions to science have been made. He is a broad man, and, while giving much of his energies to special lines of research he has not permitted these to draw his attention away from many others. Thus Professor Beal has been a teacher in the broad sense. While carrying forward large college classes he has at the same time been a leader in many State and National educational societies. Few have done more for the horticultural society of his State. He was president of the State Teachers' Association, secretary of the American Pomological Society for four years, a founder of the Society for the Promotion of Agricultural Science, a vice-president of the American Association for the Advancement of Science, as well as an active member of many other societies.

Whether as teacher, lecturer, or investigator, Professor Beal has always had (perhaps partly due to the influence of the boyhood years upon his father's farm) a fondness for the practical things of life. His writings for the public press (and they have been many and various, from the town or college paper to those which circulate among crop-growers the world over), show not only a vast fund of information but a marked directness toward some definite end. Dr. Beal has long been an authority upon the grasses, and many persons who make a special study of forage plants are looking forward with pleasure to the completion of the second and final volume of his "Grasses of North America."

Few persons in this country have been more successful than Dr. Beal in bringing the discoveries of science to the people; or, to restate the noble fact in a better form, few if any have given the masses a greater uplift toward the appreciation of laws and principles. His love for truth is so great, and his devotion so complete, that there remains no room for selfishness and no possibility of deceit. The farmer, the student, and the world of science have a conscientious friend, teacher, and upholder in Dr. Beal.

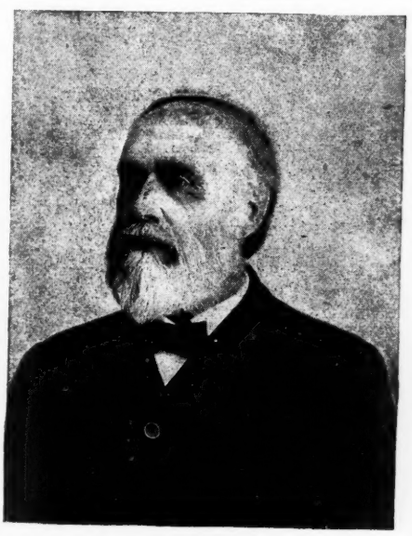
Gleanings from the Bulletins.

ALABAMA—No. 27, pages 16. The black "rust" of the cotton is treated with two full page plates for illustrations. The cotton plant is attacked by several fungi, and all help to shorten the crop. While these are treated in the bulletin the remedy seems less easily found and applied. It is, however, a long step toward the solution of the problem to know that these troubles are of vegetable origin and not due to some quality of the soil or atmosphere.

DELAWARE, No. 12. In the use of insecticides the following facts are secured: For codlin moth three sprayings gave less wormy apples than two applications. There is no difference between London purple and Paris green, used at the rate of one pound to 200 gallons of water, and sprayed three times. It has been demonstrated that the kerosene emulsion will control the ravages of the rosebug. Several spraying machines are illustrated.

IOWA—No. 13, pages 120. In this large bulletin several subjects are treated, among which, experiments in feeding for milk, fungous diseases, injurious insects, blossoms of orchard fruits and contamination of water supply for live-stock are the leading ones. Under fungous diseases the various injurious species are treated: as clover rust, cherry leaf spot, and currant blight, and methods for preventing them are described with illustrations of spraying apparatus. Among weeds the following figure largely: oxeye daisy, rib grass and hawk weed. Weeds are generally introduced with grass and grain seed. There is clover dodder in some sections. The methods of pollinating flowers are described, the grasses being among the most difficult plants. Texas blue grass and Kentucky blue grass were crossed. Clover does not self-pollenize, but the opposite is true of beans. A large number of injurious insects are figured and described, among which are leaf hoppers, clover seed midge, horn fly and apple maggot. The apparatus for spraying is also considered. Under orchard blossoms it is stated that the character of the fruit, bud and blossom has much to do with the value of any variety, and that more attention should be paid to this matter. When possible, the varieties should alternate in the rows, giving all possible attention to the season of blooming. The water supply for live-stock is sometimes contaminated by drawing the carcass of an animal, dead of anthrax, into a low place when the water used by the stock was made deadly by the escaping germs. All dead animal bodies should be thoroughly buried, or otherwise put out of the way.

MISSISSIPPI—No. 15, pages 16. From the feeding experiments the following conclusions are drawn: A ration of lespedeza hay and raw cottonseed meal is the cheapest for milk, and for butter the meal should be steamed. Cows will gain in flesh



DR. W. J. BEAL.

more when fed with cottonseed raw, roasted or steamed than with corn meal and cottonseed meal. Bermuda and lespedeza are both preferable to timothy hay; corn meal is not economical when fed with dry hay, and steamed seed will produce better butter than will raw or roasted seed. From the tests of milk-testing apparatus is gathered that the Bermling, Babcock and Patrick methods all give fairly accurate results, the Babcock falling somewhat short of the gravimetric results.

NEW YORK—(Cornell) No. 28, pages 22. Tomatoes can be advantageously forced for winter bearing, but the house should be very light and warm, and have a rich soil. The plants bear when four months old. They need to be trained to one or three stems upon perpendicular cords, and pruned from time to time. Use water freely when the plants are young, but when the fruit begins to set keep the atmosphere dry, especially at midday. The flowers need to be pollinated by hand, one-sidedness is due to insufficient pollination. Therefore, the pollen should be spread over the whole stigmatic surface. The second crop may be obtained by training shoots from the base of old plants. Lorillard and Ignotum are among the best. Fumigate with tobacco for insect pests. Fungi are controlled by carbonate of copper and Bordeaux mixtures.

NEW YORK—(Cornell) No. 27, pages 18. Under the ordinary conditions of piling and exposure the loss of manurial constituents during summer is not much below a half of the total original value of the dung. It has been determined that the value per one thousand pounds live weight per year is for the following four kinds of animals: Horses, $11.47; cows, $19.12; sheep, $38.55; swine, $17.11. Knowing these important facts it becomes the farmer to see that the manure of his animals is kept from going to great waste.

NEW YORK—(Geneva) No. 30, pages 20. The tests with a large number of sorts of cauliflower seed showed that they were generally true to name and all of good quality. In the tomato experiments it was determined that plants from green fruits were earlier than the same sort from well-matured fruit. This line of tests has been extended over several years. During one season the results were striking, the difference in time of growth to full fruitage being twenty-three days less with the green seeds. Doubtless by selecting seed at the proper time the ripening of the crop can be materially hastened, but what the effect may be upon the healthfulness of the plant remains an unknown matter.

NORTH CAROLINA—No. 76, pages 20. Under the title of plant diseases and how to combat them, the botanist has treated of the nature of fungi, the amount of their damage, kinds of fungicides, methods of their application with particular mention of the black rot of grapes, mildew and anthracnose of the vine, black knot, peach rot, apple scab, pear leaf blight, peach yellows, potato blight, rust and smuts of cereals and ergot, with many illustrations.

OHIO—No. 2, pages 20. Tobacco is recommended as a valuable remedy for aphis. The best form is a dust distributed by means of a "gun." For cabbage worms there are three out of the dozens of methods named; killing with poison by strewing the soil with fresh clover treated with Paris green. Care must be taken with this method that no stock is poisoned. Secondly, using boards as traps, and third, digging out the worms when plants have been cut off. Of the clover insects there are three, namely, the root borer, seed midge and hay worm. The first requires a rotation of crops, the second a timely mowing, and the third care of stored hay and not using old foundations for new stocks.

OREGON—No. 11, pages 24. In the notes upon grasses the tall fescue is the most promising for hay, making a large growth of excellent fodder. Orchard grass can be sown with clover as both mature at the same time. Next to orchard grass ranks the tall oat grass. It should be cut early, and usually bears a drought better than the finer sorts. A mixture of timothy grass and alsike clover yields a large amount of excellent hay. A large amount of work with potatoes is reported, the methods of cultivation, keeping of seed and notes upon varieties being the leading features considered. Seed can be well stored in partially-filled barrels which are turned every few days to break off the sprouts that may start. The Garfield is one of the most promising sorts out of three hundred and seventy-five varieties. Potatoes are the most uniform from the one eye plats, and the general results are good.

UTAH—No. 6, pages 14. This is a somewhat novel bulletin, as it treats of trials of sleds and tillage tools. Change of load from front to rear of the sled does not effect draft as in wagons. The hitch is too low down for sleds as now made. Draft is least on the shortest sled. With harrows the depth of cutting, looseness of soil, etc., influence the draft. The spring toothed harrows draw moderately, but leave the soil with an uneven bottom and tear up sod land. The square toothed harrow is superficial in action and is not well fitted for its work. Less force is required to fit a given area for crops with a harrow than a plow. The harrow should replace the plow upon soils not requiring deep tillage, excepting grass land.

WEST VIRGINIA—No. 15, pages 8. The raspberry gouty gall beetle is fully treated with a page plate illustrating its transformations and habit of boring the canes. The diseased canes may be easily detected by the uneven swelling, and a careful search should be made for them, and when found destroyed. All wild canes of blackberry and dewberry should likewise be inspected. There are fortunately natural enemies to the gall insects that may subdue the enemy. Therefore, protect the parasites and destroy the gall insects.

No. 16, pages 10. The insect ravages of the yellow locust receive treatment. Three species are illustrated. No less than seventy species of insects were taken upon the locust during the year, and of these forty-five were found feeding on some part of the tree.

Apples of Sodom.—Benjamin A. Greene, Herkimer Co., N. Y.: The "Dead Sea fruit," or *Poma Sodomitica* spoken of by various writers from Tacitus and Josephus to Milton is not a poetical or superstitious myth, but a reality. It is, in fact, a species of oak-gall, produced by the punctures of an insect, called the *Cynips insana*, in the twigs of an oak tree, the *Quercus infectoria*. Like other galls, each one is the home of a maggot, which hatches from the egg deposited by the fly and here undergoes its transformation from larva to pupa, and then emerges a perfect insect. These Dead Sea galls are remarkable for their large size and bright colors, which give them a deceptively attractive appearance.

Dog Days.—Jesse W. Peck, Camden Co., N. J.: There has been much variation in calendars regarding the limits of dog days, but the American calendar of the present time places the beginning of this period on the 25th of July and the end on the 5th of September. It is so called because the conjunction of the rising of the Dog Star with the rising of the sun was regarded by the ancients as one of the causes of the sultry heat of summer and the maladies which then prevail.

Chicken-Pox.—W. F. G., San Antonio, Texas, inquires about the cause and the cure of warts on chickens. His description of the disease is as follows: "About four weeks ago we discovered a brood-hen blind with wart-like lumps; her entire brood followed, other chickens about the premises nearly all being afflicted; many have died." From the above description we should think the disease was chicken-pox, a contagious disease, but often not difficult to manage. Bathe the head in warm water, wipe dry, and anoint with lard and salt, well mixed together. Give a little sulphur in the food. Keep the afflicted chickens in a dry place.

Dairy Interests at the World's Fair.—There are many interesting features in connection with the present outlook of the dairy at the World's Columbian Fair. A year ago considerable interest in this subject was manifested by the different dairy associations throughout the country. Then came the Holstein-Friesian Cattle Club, with an appropriation of $10,000. This was followed by the American Jersey Cattle Club, also with an appropriation of $10,000. Here the matter seems to rest so far as the dairy organizations and the Holstein-Friesian Club are concerned, while the Jersey breeders are taking the field in force. Everybody wants to see a grand display of dairy products and dairy cattle at Chicago, and it is time for all to begin to take action in this direction.

The Champion Jersey Cow.—The imported Jersey cow Bisson's Belle has closed her year's record of butter, making 1028 pounds 13½ ounces of well worked butter, salted one ounce to the pound. This is the largest record for a year's yield among Jersey cows, and stands only second to the record of the Holstein-Friesian cow Pauline Paul, with 1153 pounds 15¾ ounces to her credit. One striking feature of the performance of Bisson's Belle is that while we in this country have been pluming ourselves on our "improvement" of the Jersey this cow is imported and not of any celebrated family, showing that the merit of butter-making is latent in the breed, and only needs developing.

American Veterinary College.—This institution, established since 1875, has been gradually pushing itself forward in public estimation to such an extent that to-day it is considered at home and abroad as the best place of its kind in the United States. The fact that its classes have increased by degrees from eighteen to one hundred and thirty-two students speaks for itself, and to-day nearly four hundred graduates of this school are practicing in this country, realizing from $2000 to $15,000 and $20,000 a year. We have before us the seventeenth announcement of the American Veterinary College, and its advertisement can be found in our pages. On glancing over the pamphlet it seems to us that the institution is well provided for giving young candidates to a D. V. S. degree the knowledge they require, and that its means for teaching, either practically or theoretically, are of the best kind. Everything indicates that its success, which is well deserved, will never cease to increase, and the work it does is well appreciated. Circulars can be had from the dean, Dr. A. Liautard, 139-141 W. 54th street, New York.

White Oak Galls.—Henry C. Ryder, Fairfield Co., Conn., some time ago brought to us twigs from a four-year-old white oak, each of which was distorted by one or more galls. Last year but one gall was found on the tree. It was allowed to remain, and this year every new twig was affected. The only way to get rid of the pest is to cut off and burn the gall-bearing twigs before the young worms inside come to maturity, and escape. The female Gall-fly, by means of an organ especially designed by nature for the purpose, forces her soft, elongated egg into the tender tissues of the young twigs, accompanying the same with a specific poison which induces the abnormal growth. Prof. C. V. Riley, to whom the galls were submitted for specific determination, states that they were made by the Gall-fly, *Neuroterus batatus*, which is found all over the more northern of the United States.

Angora Goat.—S. Moxam, Colfax Co., N. Mex.: For some reason which it would be rather difficult to fully explain the Angora goat—has not as yet—assumed a position of any considerable importance in this country. But if we are to believe all that has been said in its favor by some importers and breeders of this animal it has often been on the very threshold of a great and important industry in America, but it appears to have spent its force at this point, then receded to recuperate for a few years before coming forward again. We certainly do not know of any good reason why the Angora goat should not thrive in many and perhaps in all parts of New Mexico. You have hills, mountains, and valleys, and a great variety of climate can be found, and all within a very limited area of the earth's surface.

Cultivation of Millet.—There are several very distinct species of both annual and perennial grasses known by the local name of millet. The Hungarian millet (*Panicum Germanicum*) and its varieties—including the now common golden millet—have a close compact head, six to ten inches long, and one inch or over in diameter, while an older and perhaps better known species, the *Panicum miliaceum* has long, loose, open panicles of flowers resembling those of the common broom corn. Both of these species of millet are cultivated as forage plants and they succeed best on rather light warm soils. The seed should be sown broadcast at the rate of about one-half bushel per acre and covered with a light harrow. Sowing should be deferred in spring until the soil is warm and dry, and it may follow harvest, for where the soil and weather are favorable a crop of millet hay can usually be secured in from six to eight weeks after the seed is sown.

Grafted Chestnuts.—T. Brown, Sussex Co., N. J.: The age at which grafted chestnut trees will begin to bear nuts will depend very much upon the size and vigor of the stocks. If the cions are set in stocks of some size, say six to eight feet high and over, a few nuts may be produced the second year but, as a rule, not many before the third or fourth year, after which the crop increases as the trees enlarge for a century or more. Of course, to make a success of nut-culture a man should be careful to select hardy and well-tested varieties, and those adapted to the soil and climate in which they are to be grown, but by making inquiries among these who have had some experience in such matters you can scarcely fail to make a good selection of varieties.

False Flax.—James L. Cowen, Cascade Co., Montana, sends a specimen with the following statement: "The plant comes up spontaneously on the farms around the Little Belt Mountains. The seeds soaked in warm water seem to exude oil. It seems to be the same plant as the one that grows with the flax in Minnesota just as regularly as cockle does in wheat. While no one there seemed to know really what the plant was, it yielded a good deal of oil, and buyers never objected to it in flaxseed. I have long suspected it to belong to the rape or colza tribe." This plant, botanically known as *Camelina sativa*, and commonly as False Flax, is a native of Europe, but has become naturalized in America from the Atlantic to the Pacific. It belongs to the natural order *Cruciferæ*, to which family the cabbage, turnip, radish, mustard, rape, colza, and many other cultivated plants belong. In 1883 it was but sparingly found in most parts of Montana and Idaho, but since then it has increased rapidly, showing that it is well adapted to the climate of those States. It is very rich in oil, and some claim that it is cultivated in Germany and some other European countries for this oil, which is used to adulterate linseed oil. If a market could be found for the oil this plant might be profitably cultivated in many of our States; but it is so hardy and prolific that, like mustard, it would soon become a weed and a pest unless kept in check.

Borers and Ants.—Mrs. L. F. Safford, Broome Co., N. Y.: The wounds or exposed wood on your umbrella tree should be painted over, using linseed oil and any of the common mineral paints instead of white lead. Scrape the dead wood clean, and apply the paint and have it well rubbed into all the cracks. If you dislike the color, dust the fresh paint with fine sand or dry clay. If the old wood is kept well covered with paint it will prevent rotting while the new growth is slowly covering the wound. The large ants infesting your flower beds may be driven away by drenching the soil with tar-water, or by using a pint of bisulphide of carbon in a gallon of water and pouring this into their nests. We do not know of any reliable parties propagating the blueberry or huckleberry for sale. Plants, however, can be found in almost any low ground in this State and probably in Broome county.

Peach Borers.—Subscriber, Vineland, N. J.: Wrapping the stems of peach trees with tar-paper from about two inches below the surface of the ground to six or eight above will prevent the moths depositing their eggs on the bark. The paper should be renewed every spring or at least every second year, because by exposure it loses its offensive odor. Before opening the paper the trees should be carefully examined and every borer removed, for if this is not done those already in the tree will not be affected by the tar but continue to eat until mature. We have tested the tar-paper very thoroughly and have found efficacious if properly applied and renewed as often as necessary. The paper bandages may be held in place by a piece of strong twine.

Colored Currant Leaves.—James Gillen, Lincoln Co., South Dakota: The wild currant and gooseberry leaves often assume a reddish color on the upper side during the warm weather in summer, and the cause may in general be considered as the result of a ripening process. But sometimes this change of color is due to the presence of plant lice, and especially those known as green or black aphis, insects that live by sucking the juices of the plants they infest. We presume that the lice to which you refer are some species of aphides, and can be destroyed by dusting or syringing the plants with strong tobacco water. There are no insects on the leaves you send, still they may have been there before you gathered them from the bushes.

Rose Mallow.—W. E. Shores, Jefferson Co., Ala.: The leaves and seedpods you send as "Ramie" are those of a Southern species of Rose Mallow (*Hibiscus incanus*), a plant more or less common in low, moist soils in the Southern States, and while the stems yield a fiber resembling the jute of commerce it is far inferior in fineness and strength to the genuine ramie fiber. Furthermore, the ramie plant does not belong to the mallows family but to the nettles, and its botanical name is *Bœhmeria nivea*. The nettles have small and inconspicuous flowers, while those of the mallows are very large and showy. We have no doubt, however, in regard to the value of the mallow fiber, and there are many native species, all of which may at some future time be extensively cultivated and their fiber utilized in the manufacture of cordage, grain sacks, etc.

Smut in Corn.—H. W. Lawson, Cold Spring, Ariz.: Smut is a very old disease of Indian corn, and in some localities a rather difficult one to sub-

due. To check its increase cut up and burn all stalks on which smut ears are found, and this should be done early in the season, before the smut spores are mature. At the time of planting in spring use coal-tar on the seed; a pint will be sufficient for a bushel, or perhaps more. All that is required is to have every kernel covered with a thin coat of tar. Throw half a bushel of corn into a tub, pour on half a pint of warm tar, and then stir with a stout stick until every kernel is coated; then, for convenience in handling, stir in enough wood ashes or fine dry clay to dry off the tar and prevent the sticking together of the kernels when taken to the field for planting. Crows and other birds will not molest tar-coated corn.

Raspberry Borer.—John McGill, Sanilac Co., Mich.: In the absence of a specimen of the insect infesting the canes of your raspberries we can only guess that it is the common raspberry and blackberry borer (*Oberea tripunctata*). In its winged or perfect stage it is a small, slender beetle about half an inch long, the wing covers of a dark color, sometimes black, in others yellowish, the breast and thorax a rusty yellow, and on the top of the thorax are usually two or three minute black spots. The beetles appear during the months of July and August, the females depositing their eggs upon the young canes of both the raspberry and blackberry. The grubs burrow into the pith, where they feed upon it until the following season. Sometimes the canes wither and die before the end of the season, but more frequently remain green until autumn, or even until the fruit appears the following season. The only remedy is to cut out and burn all infested canes as soon as they are discovered.

Wireworms.—Mrs. E. Van Fradenburgh, Sullivan Co., N. Y.: There are two very distinct kinds of wireworms, and both are sometimes found in the same garden. One kind belongs to the *Julidæ* or Millepedes, while the others are the larvæ or grubs of different species of *Elateridæ* or spring-beetles; so-called because when caught and placed on their backs they will suddenly spring into the air and thus bring themselves right side up. The latter kind are far the more numerous in gardens, feeding upon the roots of grasses, weeds, and vegetables. To apply lime or any similar substance in sufficient quantity to kill the wireworms would destroy all kinds of vegetation; consequently, wholesale destruction is out of the question, and we must be content with lessening their number by placing leaves of cabbage, lettuce, sliced turnips, and potatoes about the garden to attract them, and when they collect under these catch and kill the pests. Pieces of old boards, bark, or shingle dropped about in shady places will also attract them, especially if some of their favorite food is placed nearby.

Agricultural Salt.—J. H. Moore, Lancaster Co., Pa.: We are not quite certain as to the kind of material to which you refer under the name of "agricultural salt," because common salt and kainit or German salts are both largely used for agricultural purposes. The German salts are most valuable, because they contain a large percentage of potash, which is well known to be a direct and valuable fertilizer for nearly all kinds of farm crops. Common salt is used on land mainly for the purpose of destroying worms, the larvæ of noxious insects and weeds, and for aiding in the retention of moisture in the soil during the growing season. But both are usually sown broadcast before the seed is sown but after the land has been plowed for the crop. Common salt may be applied at the rate of eight or ten bushels per acre, but of German salts two to three hundred pounds is considered a fair dressing for ordinary crops.

American Pomological Society.—President P. J. Berckmans informs us that all the preliminary arrangements for a most successful session of this time-honored association have been completed. The twenty-third biennial meeting will be held in Washington, D. C., on the 22d, 23d, and 24th of September, in the Hall of the National Museum. Most satisfactory arrangements have been made with the proprietors of the Ebbitt House, corner of 14th and F streets, for those attending the convention. A very interesting and valuable programme, comprising every branch of practical, scientific, and commercial pomology has been prepared. The list of specialists who will read papers, or take parts in the discussions thereon, comprises a brilliant array of the most distinguished pomologists from all parts of our country. A cordial invitation is extended to horticultural, pomological, agricultural, and kindred associations in the United States and British Provinces to send delegations as large as they may deem expedient, as well as to all persons interested in the pursuit of pomology. To be entitled to the reduction of fares granted by the railroads, as well as the courtesy extended by the Department of Agriculture and the citizens at Washington, and the special hotel rates, all persons intending to attend the session should inform the treasurer, Benjamin G. Smith, Cambridge, Mass. For circulars giving special information in regard to the society and its forthcoming session address Sec. G. B. Brackett, Denmark, Iowa.

Death of Mr. P. M. Augur.—With the death of Mr. P. M. Augur, which occurred on July 14, at Middletown, Conn., New England loses one of its most prominent and successful pomologists. For the past twenty-five or thirty years he has been actively connected with the American Pomological Society, in which he held the position of vice-president for the State of Connecticut. He was also State Pomologist of Connecticut, and has done a great deal of valuable work in promoting the horticultural interests of his State, and his death will be seriously felt throughout New England and even beyond its limits.

Fertilizers in Florida.—F. K. Adams, formerly a successful farmer in Wisconsin but now of De Soto Co., Fla., writes us: "It is a peculiarity of all fruits, and especially vegetables, that the further south they are planted the longer they take to mature. Do you think in planting cabbage, cauliflowers, beets, turnips, peas, etc., that an application of nitrate of soda would hasten their growth?" Provided there was a good supply of other plant food it would undoubtedly do so. But it might not necessarily hasten their maturity. In other words they would be bigger but might not be earlier. Judging from our own experience here at the North, we should expect the cabbage, cauliflowers, and beets would be both larger and earlier. Mr. Adams adds: "Our soil is sandy and lacks potash, but contains an abundance of phosphate of lime." Nevertheless we should not be surprised to hear that superphosphate, in connection with nitrate of soda and potash, was a highly profitable fertilizer for fruits and vegetables.

Lame Feet in Chickens.—Mrs. I. B. Smith, Macon Co., Ill., inquires what ails her young chickens, which get lame first in one foot and then in both feet until it becomes necessary to kill them. "Their feet and legs look and feel perfectly sound only their feet are slightly drawn." It is obviously difficult to answer the above inquiry, because the necessary facts are wanting. We do not know under what circumstances the chickens are kept, nor how they are fed. The trouble is probably one of three things—rheumatism, leg weakness, or liver complaint. For rheumatism, see that the chickens have warm, dry quarters; give a couple of grains of bromide of potassium in a gill of drinking-water, and bathe the legs with any good stimulating liniment. For leg weakness, give a liberal amount of bonemeal in the food, and feed on wheat chiefly. For liver complaint little can be profitably done except to feed no Indian corn in any form.

Will Fertilizers Pay in Illinois?—A correspondent in McLean Co., Ill., writes us: "If you think it would pay here on our soil I should like to try nitrate of soda. It is some expense and trouble to get stable manure, and I should be glad of some substitute." On ordinary farm crops in Illinois it is doubtful whether nitrate of soda can be used with profit. On fruits, vegetables, and any produce commanding a good price nitrate of soda and superphosphate can undoubtedly be used with great advantage. It should rarely if ever be used alone. Superphosphate, and sometimes potash, should be sown at the same time or previously. If the soil in Illinois is as rich in nitrogen as is generally supposed, it is highly probable that superphosphate can be used with decided profit on wheat, barley, oats, corn, and potatoes. It will enable these crops to appropriate the available nitrogen which is annually set free by the nitrification of the organic matter in the soil, and which if not appropriated by crops or weeds is often lost by leaching into the subsoil. Superphosphate can now be purchased at a very reasonable price, and our friends on the rich lands of the West should certainly give them a trial. We use them here in increasing quantities every year, and could not otherwise compete with the West. It is a mistake to attribute their increasing popularity to the poverty of our soils. It is on our best and richest soils where superphosphate produces its most marked and beneficial and profitable effect. On the rich land of the West it should give even a better account of itself than it does here.

Overfeeding.—Joseph Percifer, Cass Co., Texas, writes: I have a thoroughbred race horse I think a good deal of who has become dull and feverish. I give him the best of care and feed him well. I am not a professional horse man, but living a sedentary life I keep him as a saddle horse. I have only owned him a few weeks. My stable boy has the sole management of him. What shall I do with him? When men are overindulgent at the table they, too, become dull and feverish, but when they reduce their diet they are restored to perfect health. Your horse is probably overfed. Corn is not good food for any but hard working horses in cool weather; and then it should be diluted with roots, carrots, beets or mangels. Wheat middlings and oats are good feed for horses. The locomotive consumes fuel according to speed. Engineer your horse likewise.

The General Grant Monument.—The executive committee of the Grant Monument Association has developed an excellent plan for raising the balance of the funds necessary for the completion of this national monument. It is proposed to place a contribution box in the Floral Hall on the fair grounds of every county agricultural society in the United States. A lady manager is to be appointed by the respective societies, and will be put in charge of this collection, and, in recognition of her patriotic work, will receive a beautiful large engraving of General Grant in his library writing his memoirs. This undertaking should meet with abundant success. Officers of fair associations who have not already received circulars to this effect should address the Treasurer of the Grant Monument Association, Mr. Horace L. Hotchkiss, No. 36 Wall street, New York City.

Profit in English Walnuts.—A California orchard of *Juglans regia* or English walnut, one hundred acres in extent, pays a profit of $15,000 yearly. Another of forty acres gave a return of nearly $6,000 last year, although not in full bearing. The tree grows well in other States and bears freely when eight or ten years old. The market for walnuts is active at good prices, and the demand is constantly growing.

The Green Mountain Versus Winchell.—We are glad to know that the Green Mountain Grape, of whose excellence we have made mention in a previous issue, and which was introduced about two years ago by Steven Hoyt's Sons, New Canaan, Conn., is steadily gaining in favor. It has been claimed by some parties that it was identical with the Winchell, but Prof. W. F. Massey, of the North Carolina Experiment Station, who has grown the two varieties alongside of each other, declares that they differ widely in appearance.

Personal.—In consequence of the withdrawal of Prof. W. O. Atwater, Mr. A. W. Harris, formerly assistant director, has been appointed Director of the Office of Experiment Stations of the United States Department of Agriculture, and Mr. A. C. True, the first assistant editor, has been appointed assistant director. Prof. Atwater retains a connection with the office as a special agent in relation to European investigations in agriculture and as a scientific adviser. The office has recently issued the second part of the Digest of Annual Reports of the Experiment Stations for 1888, and will soon have ready for distribution No. 12 of Vol. 2 of the Experiment Station Record. This number will contain an unusually full index, which, aside from its use as a means of reference to the volume, will have special value as a key to the various lines of investigation pursued by the experiment stations.

Fighting Rams, How to Prevent.—A subscriber from Ohio writes that he prevented his rams from fighting by tying an old rubber boot in front on their foreheads. Whether this prevents injury, or discourages the fighting disposition by its novelty, is not known, but it is certain that the combativeness has disappeared from the flock since using this strange device.

AMERICAN AGRICULTURIST
FOUNDED IN 1842
SEPTEMBER, 1891.

A Grand Art Competition.

Five hundred dollars are offered in prizes for the most original, truest to Nature, and best executed pen drawings and sketches suitable for any department of the AMERICAN AGRICULTURIST.

We are led to make this magnificent offer in the belief that it will not only induce recognized artists (who are not already in its employ) to submit their best work to the AMERICAN AGRICULTURIST, but that it may stimulate and draw out the art talent of our readers throughout the world. For the competition is open to all, irrespective of age, occupation, or residence, except that all contestants must be subscribers to the AMERICAN AGRICULTURIST, while the members of our present art staff are of course debarred.

In awarding the prizes, great stress will be given to the originality displayed in the sketches submitted. Execution and finish will be fully recognized, but adaptability to our columns will also be essential. In this way, the work of artists of established reputation will receive its just deserts, while offering every encouragement to budding genius and to the talent whose development has perhaps had no chance to show itself.

To further adapt the competition to special abilities there will be four classes, so that those at all gifted in any line of art work available for the AMERICAN AGRICULTURIST may compete on a basis satisfactory and equitable both to the professional and amateur. To further cover this point, extra prizes to the amount of One Hundred Dollars will be given for specially meritorious work that may not secure a prize in any of the various classes. Moreover, all work that fails to win a prize will be paid for at our regular rates if suitable for our use; all drawings and sketches that do not come within these provisions will be the property of competitors, subject to return to them.

CLASS ONE.

ANIMAL LIFE.—Portraitures of typical animals of the various breeds of cattle, horses, sheep, swine, poultry, pigeons, dogs, etc. Merit in this class will necessitate accurate and life-like execution and naturalness of posture.

This does not mean "fancy pictures," that are practically useless to farmers and stockmen, but correct portraits of a known animal, or bird, executed with a faithfulness that shall make the drawing replete with life in contradistinction to the old-fashioned cuts that were as "wooden" as the blocks upon which they were engraved.

Being the most difficult of all the classes, this one is placed first. Sufficient information should accompany drawings to make them available to use. The prizes will be: **$50.00, $25.00, $15.00, $10.00.**

CLASS TWO.

HUMOR AND WIT.—This class includes cartoons on current affairs affecting agriculture, issues of the day as they relate to farmers, hits on prominent agricultural officials, take-offs on agricultural fads and peculiarities, etc. In this line artists must bear in mind the dignity of agriculture, and avoid making the farmer or his business the butt of ridicule.

This class is also open to all kinds of witty pictures, amusing scenes in actual life, on the farm or in the home, and anything that may properly provoke a smile in young or old.

Whatever language is necessary should accompany the sketch, but we suggest that the best work in this line is that which requires the least explanation. Prizes: **$50.00, $25.00, $15.00, $10.00.**

CLASS THREE.

DOMESTIC AND LITERARY AFFAIRS. — The sketches may pertain to household economy, interior and exterior home decoration, new ideas for making home life more attractive, rural society more interesting, etc.

This class will include work-saving conveniences used in the household, in window-gardening, outdoor flower-culture, dress-making, etc.; ingenious devices to aid in the care and entertainment of little children; diagrams and illustrations of novel games and indoor and outdoor amusements; sketches of decorations for schoolhouses, society halls, platforms, and playrooms; suggestive ideas for holiday occasions, etc.

Originality is a chief requisite for this class. No photograph cases, broom-holders, sachet-bags, matchsafes, or sofa-pillows are wanted, and no decorative ideas will be considered unless they possess some point of novelty. Pen drawings may illustrate accompanying literary manuscripts, the latter to be paid for at our regular rates if accepted. Prizes **$50.00, $25.00, $15.00, $10.00.**

CLASS FOUR.

RURAL AFFAIRS.—This may include drawings illustrative of improved methods, plant life, natural history, village improvement, country scenes, and other matters pertaining to Nature and to outdoor work and life not specially included in the foregoing classes.

In this connection outdoor sports for men and boys might be illustrated in a series of sketches showing how conducted, funny incidents that occur in such sports, etc. There are various sports and ways of having fun in rural communities or on lonely farms that might be given in this class. Prizes: **$50.00, $25.00, $15.00, $10.00.**

Drawings must be executed in jet-black India ink. The size may be such as to permit of the necessary photo-reduction in engraving to accommodate our columns. Pencil sketches by those so located as not to be able to obtain India ink will be accepted on their merits, the idea being to impose no restriction that shall impede any talent from making itself known, in however humble a way. Sketches should be carefully packed flat and should be sent by mail or express prepaid to "Art Contest, AMERICAN AGRICULTURIST, 52-54 Lafayette Place, N. Y." The artist's nom de plume should appear in pencil on the upper left-hand corner, and upon a sealed envelope containing a stamped envelope bearing the competitor's full post-office address. Explanations or manuscript accompanying the sketches should bear in the same position a similar nom de plume, and be laid flat on the drawings, the whole being sent in one package. The date of the closing of the contest will be announced in the AMERICAN AGRICULTURIST for October, but the earlier the drawings are sent in the better, especially for our subscribers in distant parts of this or other lands. Contestants not now subscribers may remit their subscription with their drawings; the terms appear on the last page of the current issue.

The Market to the South of Us.

Beginning this month the markets of Brazil and the Spanish West Indies are open to all American farm products, except that the admission of American flour into Cuba is delayed until December first. The tremendous impetus this new market will give to our exports of breadstuffs is clearly stated in the very complete article on the subject on Page 523.

The reciprocity treaties can be discussed in the AMERICAN AGRICULTURIST only on abstract commercial grounds without reference to their political bearing. The question with us, and with our farmers, is not what party is responsible for the policy that opens these markets, but how can the farmer get the utmost benefit from this new and profitable outlet for his surplus.

Certainly a reduction in the Cuban tariff from $4.50 per barrel to ninety cents must enable the American flour to command the market.

This means an extra demand for our present fine wheat crop. This new market coming in addition to the European shortage still further indicates profitable prices.

Certainly there are strong indications of a return to prosperous times for American agriculturists.

Make the Institutes More Useful.

The farmers' institutes of New York, Wisconsin, and other States have been growing in interest remarkably of late years. This is because they have been found to be practical and helpful to the farmer. Wherever properly organized and well advertised the attendance at these meetings has been large, and the farmers have learned that the institute is organized in their behalf and is still untouched by the hand of the politician. So great is the interest in New York that as early as July the director of institutes had received fifty applications for meetings the coming winter, and the demand for them is such that a double set of meetings will have to be held to accommodate it.

Yet there are many farmers who do not or cannot attend the institutes. These are usually the least progressive farmers—men who do not subscribe for the agricultural papers and whose reading is mostly confined to their local paper and political weekly. The only effective way to reach these and others is for the institute management to print a full report of each institute in the form of a single sheet supplement, to be furnished free of charge to the local papers in the surrounding counties. These supplements would disseminate the good work of the institutes as no annual report can do, and the expense would be but little more than the bulky annual reports which so few farmers now see.

The local country paper is read more carefully than almost any other publication by the people to whom it goes. This means of reaching the farmers who most need im-

provement should be carefully cultivated. No local publisher would object to employing so valuable a supplement. The usefulness of the local paper is not half appreciated by the community in which it is published. There is hardly a country editor who is not doing far more for his clientage than any other man in the town, usually with very moderate recompense. So patriotic a body of men as our country editors, with the mighty engine of the press at their command, can accomplish wonders for the education and improvement of their communities. They are ready and willing to do their part in the farmers' movement if they are provided with reasonable facilities for cooperating in the work.

This plan is adopted with excellent success by the Missouri State Board of Agriculture. Its monthly crop reports, information and news about the agricultural college and experiment station, State weather service and special articles of interest to Missouri farmers, are all published in a convenient single-sheet supplement which has a large circulation through the country newspapers.

The Question of the Hour.

The most powerful presentation of the immigration issue is the able paper in the *Forum* for August by the Superintendent of the Census of 1870 and 1880. The extracts from it printed on Page 518 may appear harsh, but the writer explains that he does not hold all immigrants to be of the undesirable class against whom he makes so forcible an array of facts. With this explanation the subject is presented in a way that must commend it to all patriotic citizens —native or foreign born.

Mr. Walker performs a grave duty in showing the relationship between immigration and the falling off in the native birth ratio. The two questions have a relationship that every citizen must recognize, and that are equally important to the State. Both have a peculiar interest to farmers.

The developments of immigration, machinery and special legislation have all conspired to increase production and depress prices. A lower standard of living on the farm is the inevitable tendency. It exists to-day to a far greater extent than the general public is aware. Mr. Walker but feebly describes how this tendency has already reduced the standard of life on the Northwestern prairies. One of its saddest manifestations in the East is the growing lack of children on the farms of our Central and New England States. The large families for which the farmers of this section were once famous are now the exception. Their great crop of noble men and women whose influence has shaped the destiny of the entire West and Southwest is much reduced in number without corresponding increase in the physical standard or moral character.

Manifestations of a diluted American blood are already apparent to the observant student. Monopoly has its manifold grip on American industries largely because the masses have not exercised that independent and vigilant supervision of affairs of government that characterized the nation's earlier decades. The present farmers' movement and industrial unrest is a belated but none the less patriotic attempt to correct these errors. Yet some of its features can only be accounted for on the theory that the sturdy spirit of earlier settlers and old-time pioneers has suffered by dilution of blood or by the enervating influences and discouraging environment of much of our modern life.

Rome fell because there were no more Romans. Our farmers and other patriots,—of foreign and native birth, for there are multitudes of both classes of equal devotion to the country,—are none too soon uniting against abuses that if unchecked might so sap our life that ultimately there would be no Americans.

How vast the field of usefulness for the farmer patriot!

Biggest is Not Best.

It is well for a farmer to test the capacity of an acre and find out how much of this or that it can be made to produce, but it is not always the best system of agriculture. The size of a crop is one thing, and the profit of it another. The soil can be overstocked with fertilizers, and the plants thereby overfed. The crop may be larger than the average, but it may have cost many times more than the average. The man who is striving to get the greatest income for the least outlay or, in other words, the greatest profit from his acres, must count his investments in money and time and apply only enough of manure, seed, labor and attention to give the best returns for energy expended. Each must, by successive trials, decide what this amount must be. It will pay one man in one locality to so enrich his soil and tend his crop of corn that it will yield a hundred bushels, but another farmer on another soil in a different locality from market may lose money if he tries to grow more than fifty. Farming is a business, and not a game of "get the biggest crop," no matter by what means.

OUR LIBRARY CORNER.

PRACTICAL FARM CHEMISTRY: A Handbook of Profitable Crop Feeding; Part I.—The Raw Materials of Plant Food; Part II.—The Available Sources of Supply; Part III.—Principles of Economic Application, or Manuring for Money. By T. Greiner, cloth, pp. 163. Published by the author.

The term Agricultural Chemistry implies to many farmers something so abstractly scientific that they shun the idea of having anything to do with the entire subject. Realizing this fact the author of this work, who is himself a practical farmer, has set himself to work to show in the pages of this volume that any man of ordinary intelligence can make himself familiar with all the chemical knowledge required in successful and progressive farming, without a course of chemical lectures or without ever entering within the doors of a chemical laboratory. The entire work is written in such a commonsense, pleasing style, that few persons who have read the first chapter will lay the book aside before having read each succeeding one. Moreover, they will find that the spirit of investigation and experimentation has been awakened in them to such a degree that their future farming operations will prove more interesting and profitable to them than their former work has been. Of special value to every tiller of the soil are the chapters on the constitution of soils; the essential plant food and their values; the relative importance and values of yard manures and artificial manures. These are thoroughly discussed, as well as the more economical feeding of the various farm and garden crops. Many a single chapter in this work is well worth the price of the entire volume. Sold by the Orange Judd Co.; price $1.00.

STATE BOARD OF AGRICULTURE OF NEW JERSEY: Eighteenth Report, 1890-91; transmitted by Franklin Dye, Secretary; cloth, pp. 510.

As usual the report from this State is voluminous and valuable; some of the ablest practical and scientific agricultural talent in the country has responded to the demands of the annual meeting. The lecture by Prof. B. T. Galloway on Plant Diseases and Their Treatment was able and opportune and ought to be very encouraging to fruit growers of every class. Other suggestive addresses on spraying were given. The noble and powerful address of Prof. W. I. Chamberlain ought to be read by every farmer in the land. Many other important papers might be mentioned. The report may be secured by applying to Franklin Dye, Secretary, Trenton, Mercer Co., N. J.

OREGON STATE BOARD OF HORTICULTURE; First Biennial Report, 1891; also Appendix to the Organization and Work of the Oregon State Horticultural Society; cloth, pp. 144.

This highly creditable report contains a copy of the law creating the Board, and the amendments subsequently proposed and adopted; reports of the president, inspector of fruit pests, treasurer, secretary, and of the five district commissioners. An Appendix containing a summary of the transactions of the State Horticultural Society since its organization, Nov. 17, 1885, its constitution and by-laws, and list of officers and members is included. It contains much profitable reading for fruit growers. Address Prof. E. R. Lake, Secretary and Treasurer, Corvallis, Oregon.

THE ARGONAUT. THE IDEAL GENERAL-PURPOSE FOWLS: By H. S. Babcock; paper, 24 pp. with illustration. Published by the Author.

The demand for a general-purpose fowl, one which would unite great laying with excellent table qualities has increased with every succeeding year. Although the greatest prolificacy and the finest table qualities may never be found fully united in one fowl, the judicious breeder aims to get as near to his ideal as natural conditions make possible. The reader of this pamphlet will soon become convinced that Mr. Babcock in originating the Argonaut has succeeded in producing a breed which comes as near the ideal general-purpose fowl as can reasonably be expected. Sold by the Orange Judd Co.; price 25 cents.

STATE HORTICULTURAL SOCIETY OF MISSOURI; Thirty-third Annual Report; cloth, pp. 582.

There is not a more wide-awake State horticultural society in America than this. Its voluminous reports always bring out some new and valuable information and at its meetings such a lively interest and fraternal spirit is shown that its influence for the good of horticulture is becoming more far-reaching each succeeding year. In this report for 1890 is included, along with other good things by various contributors, a very useful "Outlines of Entomology" by Mary E. Murtfeldt, which will be appreciated by the horticulturists of the State. Address L. A. Goodman, Secretary, Westport, Missouri.

VERMONT DAIRYMEN'S ASSOCIATION; Report of the Twenty-first Annual Meeting, 1891. Edited by Jas. K. Curtis, Sec'y; paper, pp. 159.

This is one of the most excellent reports on the subject of dairying that has been printed in recent years. The papers read were of a practical character and the numerous discussions were healthful and appropriate. We are glad to see how much real good is being done for dairy interests of the country by this association. All dairymen should secure a copy of its report. Address James K. Curtis, Secretary, Georgia, Vt.

OUR SHEEP AND THE TARIFF: by William Draper Lewis, Fellow of the Wharton School of Finance and Economy, University of Pennsylvania. Cloth, pp. 158. University of Pennsylvania Press Co., 1890, Philadelphia, Penn.

The principal object of this work is to investigate the present condition and future possibilities of the wool and mutton industry of the United States, with a view to ascertaining the advisability of continuing our present tariff on raw wool. The work is comprehensive and of value to everyone interested in sheep raising as well as those who make the tariff question a special study.

THE INDIAN GAME, ITS DESCRIPTION, CHARACTERISTICS, ORIGIN, HISTORY AND BREEDING: By H. S. Babcock. Paper, 24 pp. Colored illustration. Published by the author.

To the breeders of strictly pure-bred fowls, this

(*Continued on Page* 525.)

ISSUES OF THE DAY.

The Effect of Free Coinage.

AN INTERVIEW WITH MORETON FREWEN.

Q.—If a free coinage act should pass next session should we be in danger of coming down to a silver currency in this country? Should we, that is, lose our gold?

Mr. Frewen—Why should you?

Q.—Well, if we exchanged gold for silver at a ratio of one to sixteen, would not the great stocks of silver in Europe be sent here to be exchanged for gold until all our gold had gone abroad?

Mr. Frewen—That I notice is the view adopted by Senator Sherman and others, but I cannot see any warrant for it. Twelve years ago the foes of silver here used to declare that the limited coinage under the Bland bill would expel gold to Europe; but, far from it, you have continued ever since to draw gold from Europe, in addition to keeping at home your entire domestic product of that metal.

Q.—Is it, then, your view that an offer of 129 cents per ounce for silver will not bring that metal here from Europe?

Mr. Frewen—Why should it? There is no silver bullion to speak of there, and coined silver, which is already legal tender money at a higher ratio (one to fifteen and a half), is not going to be melted up for such a purpose.

Q.—Might not the government, say of France, melt up five-franc pieces and deluge us?

Mr. Frewen—You forget, perhaps, that the French government as recently as December, 1889, refused an offer of 133 cents in gold per ounce for sixty million dollars' worth of these same five-franc pieces, and this being so why should France now wish to sell silver to this country at 129 cents per ounce?

Q.—What offer do you refer to?

Mr. Frewen—That year, 1889, concluded the term of the Latin Monetary Union, and under its conditions each country forming that union was obliged to redeem in gold, and at its face value, one-half of its silver coins which were current in any of the other signatory countries. There was at that time, and still is, more than one hundred and twenty million dollars of Italian, Belgian, Swiss, and Greek silver circulating in France, and yet France, having already more than sufficient gold to secure the convertibility of her silver, declined to exercise her option and call this mass of gold in exchange for coined silver at 133 cents per ounce. But the fact is, free coinage would not enable any foreign country to exchange silver for your gold. Free coinage is merely the permission given to any man to bring silver to your mints and have it coined into legal tender dollars; if, having done so, he takes those dollars to a bank here and demands gold in exchange, the banker need not give gold; if you had a credit of ten million francs at the Bank of France to-day, you could not draw gold from that institution; you draw notes which the bank is not obliged to pay in gold, but can pay in legal tender five franc silver pieces. So that if European silver was melted up and sent here, was then coined and deposited at a bank, and the owner wanted gold, he would just walk down to Wall street and buy New York Centrals and sell those shares again in London for gold, drawing gold from the Bank of England. That is the only institution in the world which obliges itself to pay gold on demand. Free coinage here might cause a run for gold on the Bank of England, not on your banks here.

Q.—So that you disbelieve in this theory of melt-up European silver, and you hold that even were it melted up the first drain would come upon the Bank of England gold reserve?

Mr. Frewen—Yes, I quite disbelieve. In any case no silver could be melted up in Europe without fresh legislation, not even in Germany without supplies being voted by the Reichstag for the purpose, and if you here pass a free coinage measure you can insert a provision that in the event of changes of standard and the melting up of legal tender coin by foreign nations your coinage of silver here should be suspended.

Q.—But we have been losing a great deal of gold lately to Europe?

Mr. Frewen—Yes, indeed; and you can probably afford, all things considered, to lose a little more; your wheat and cotton exports are likely to bring it home again this fall; and meanwhile it has had the effect of raising produce prices in Europe, and thereby stimulating your export trade.

Q. Is it your view that free coinage is desirable in this country from an economic standpoint?

Mr. Frewen—I should be sorry to see it, because it would weaken the prospect of a monetary union of all the leading nations with open mints for both the metals. At the same time a high price for silver here means high prices for wheat and cotton; if, on the other hand, the price of silver falls, the exports of agricultural produce to Europe from silver-using Asia are stimulated at the expense of the American farmer. In desiring to see the price of silver higher the Farmers' Alliance party is very well advised.—*New York Sun.*

Immigration and Degradation.

FRANCIS A. WALKER.

The American shrank from the industrial competition thrust upon him. He was unwilling himself to engage in the lowest kind of day labor with these new elements of the population; he was even more unwilling to bring sons and daughters into the world to enter into that competition. For the first time in our history the people of the free States became divided into classes. Those classes were natives and foreigners.

Foreign immigration into this country has from the time it first assumed large proportions amounted not to a reinforcement of our population, but to a replacement of native by foreign stock. That if the foreigners had not come the native element would long have filled the places the foreigners usurped, I entertain not a doubt. The competency of the American stock to do this would be absurd to question in the face of such a record as that for 1790 to 1830, when the native-born population increased 227 per cent.

Opinions may differ widely on the question whether the United States have as a whole, gained or lost by so extensive a replacement of the native by foreign elements in our population. But, whatever view may be taken of the past, no one surely can be enough of an optimist to contemplate without dread the fast-rising flood of immigration now settling in upon our shores. During the past ten years five and a quarter millions of foreigners entered the ports of the United States. We have no assurance that this number may not be doubled in the current decade. Only a small part of these newcomers can read, while the general intelligence of the mass is even below what might be assumed from such a statement. By far the greater part of them are wholly ignorant of our institutions, and, too often, having been brought up in an atmosphere of pure force, they have no sympathy with the political ideas and sentiments which underlie our social organization; often not even the capability of understanding them.

What has just now been said would, of course, have been true in some degree of the body of immigrants in any preceding period. But the immigration of the present time differs, unfortunately, from that of the past in two important respects. The first is, that the organization of the European railway and the ocean steamship service is now such as to reduce almost to a minimum the energy, courage, intelligence, and pecuniary means required for immigration; a result which is tending to bring to us no longer the more alert and enterprising members of their respective communities, but rather the unlucky, the thriftless, and the worthless.

The second characteristic of the immigration of the present, as contrasted with that of the past, is that it is increasingly drawn from the nations of Southern and Eastern Europe—peoples which have got no great good for themselves out of the race wars of centuries, and out of the unceasing struggle with the hard conditions of nature; peoples that have the least possible adaptation to our political institutions and social life, and that have thus far remained hopelessly upon the lowest plane of industrial life.

So broad and straight now is the channel by which this immigration is being conducted to our shores, that there is no reason why every stagnant pool of European population, representing the uttermost failures of civilization, the worst defeats in the struggle for existence, the lowest degradation of human nature, should not be completely drained off into the United States. So long as any difference of economic conditions remains in our favor; so long as the least reason appears for the miserable, the broken, the corrupt, the abject to think that they might be better off here than there, if not in the workshop then in the workhouse, these Huns, and Poles, and Bohemians, and Russian Jews, and South Italians will continue to come, and to come by millions.—*The Forum for August.*

Objections to Free Coinage Removed.

EDWARD ATKINSON.

Amend the act so that it shall correspond to the laws and the customs relating to pounds-weight. Bargains are made every day to buy and sell so many pounds of cotton, wool, hides, and every other kind of useful goods, except gold and silver bullion. The law says that any man who sells a pound shall deliver troy pounds of 5,760 grains. But the law does not require the kind of pound to be named in every bargain and sale of either goods or of bullion. It is not necessary to name the kind of dollar in every bargain or sale. Amend the legal tender act so that any man who has promised to pay simple "dollars" for anything except gold or silver bullion, without any other word describing the kind, shall be under the obligation to pay dollars of gold; but also permit him to make his bargains for any kind of goods in silver dollars, provided he says or names silver; then the free coinage of either kind of dollars will be perfectly safe.

There is no international act of legal tender. If any one contracts to buy goods and to pay in pounds sterling in London, he must pay in gold or fail. There is not even any coin named "pound sterling." The coin which corresponds to the weight of gold designated "pound sterling" is called a sovereign; that is its lawful name. Conversely, any man who sells corn, or cotton, or wheat, or beef, on a contract to be paid in pounds sterling, can collect his debt in gold. No act of legal tender can deprive either the purchaser or the seller of his rights.

Gold is the standard of the world's commerce. We cannot cut ourselves away from it if we would, and we would not if we could, because it is the safest and surest standard that we can tie up to. The price of the entire crop of wheat and grain, and of everything else that our farmers produce in excess of our own wants, is fixed at the gold standard by what the surplus will sell for in the home market for export. That price of the surplus establishes the price of the whole crop; no matter what kind of money may be legal tender in the United States—whether it be silver dollars worth eighty cents, depreciated notes or what-not; what the farmer gets is, and always will be, just what his crop is worth in gold.

If the free coinage of silver dollars were authorized without a change in the act of legal tender, there is no class of men who would be so badly cheated, or, in the vernacular, "so badly sold," as the farmers who want it. The farmers are beginning to find this out, and it will not be very long before those who advocate the free coinage of silver dollars without a change in the legal tender act will find themselves so feeble, in number and in every other sense, that they will not count for much in either influence or votes.—*The Forum.*

Reforming Our Fiscal System.

SYLVESTER PENNOYER, GOVERNOR OF OREGON.

The currency which is proposed to be issued should be based upon a perfectly secure and imperishable foundation, and should be a legal tender for all debts, public and private. Such a basis can only be furnished by the real property of the country. To accept personal security, or any other security than the improved real property of the country, would be to hazard the loan; which the government, in the interest of the whole people, poor as well as rich, cannot justly do. There can be no better or safer security for a government loan than the real property of the nation. If the loan is placed upon such property at one-half or one-third of its real value it is as secure as the government itself, and the currency based upon such a loan is as good as a government bond, or gold and silver.

The main argument against such a policy is based upon its supposed impracticability. This has been answered by stubborn facts. The State of Oregon has now more than two million dollars of school money loaned out upon the improved farm property of the State. The amount of the loan is fixed at one-third of the fairly-appraised

[*Continued on Page* 520.]

ETERNAL VIGILANCE

Is the Price of Liberty, and also of Immunity against Loss by Swine Diseases.

DO NOT WAIT

Until your Herds are sick—and perchance many are past treatment—but use in time

DR. JOSEPH HAAS'

Hog and Poultry Remedy

(Used successfully for 14 years.)

PREVENTS DISEASE. ARRESTS DISEASE.
STOPS COUGH. DESTROYS WORMS.
PRODUCES PORK. HASTENS MATURITY.

THOUSANDS OF TESTIMONIALS.

PRICES: 25-lb cans, $12 50; $2.50, $1.25 and 50c a package. Largest are cheapest. Orders by mail receive prompt attention.

Write for Circulars Send 2c stamp for "Hogology," a 64-page pamphlet on swine. [Mention this paper.]

JOSEPH HAAS, V. S., Indianapolis, Ind.

HARTSHORN'S SELF-ACTING SHADE ROLLERS

Beware of Imitations.

NOTICE AUTOGRAPH OF Stewart Hartshorn ON LABEL AND GET THE GENUINE HARTSHORN

JONES' SCALES

— THE BEST —

FULLY WARRANTED

5 TON SCALES $60 FREIGHT PAID

ADDRESS JONES OF BINGHAMTON, N.Y.

AGENTS WANTED.

This is THE QUAKER CITY GRINDING MILL

For CORN and COBS, FEED and TABLE MEAL.

Send for all mills advertised. Keep the best and return all others.

A. W. STRAUB & CO., Philada. Pa.

Territory East of Ohio.

SPRINGFIELD IMPLEMENT CO. Springfield, O. Ter'y West of Pa

BEECHAM'S PILLS

CURE

SICK HEADACHE,

Disordered Liver, etc.

they ACT LIKE MAGIC:—*a few doses* will work wonders upon the Vital **Organs**, **Strengthening** the muscular **System**, restoring long-lost **Complexion**, bringing back the **keen edge of appetite**, and arousing with the **ROSEBUD OF HEALTH** the **whole physical energy** of the human frame. These are "facts" admitted by thousands, in all classes of society; and one of the best guarantees to the Nervous and Debilitated is that **BEECHAM'S PILLS HAVE THE LARGEST SALE OF ANY PROPRIETARY MEDICINE IN THE WORLD.**

Prepared by Thos. Beecham, St. Helens, Lancashire, England.

SOLD BY ALL DRUGGISTS. 1

ALLCOCK'S POROUS PLASTERS

ALLCOCK'S POROUS PLASTERS are unapproachable in curative properties, rapidity and safety of action, and are the only reliable plasters ever produced.

They have successfully stood the test of over thirty years' use by the public; their virtues have never been equaled by the unscrupulous imitators who have sought to trade upon the reputation of ALLCOCK'S by making plasters with holes in them, and claiming them to be "just as good as ALLCOCK'S.

ALLCOCK'S POROUS PLASTERS stand to-day endorsed by not only the highest medical authorities, but by millions of grateful patients who have proved their efficacy as a household remedy.

Beware of imitations, and do not be deceived by misrepresentation. Ask for ALLCOCK'S, and let no solicitation or explanation induce you to accept a substitute.

FIRE PROOF. Easily applied by any one. Send for Samples and Descriptive Price List.

H. W. JOHNS MANUFACTURING COMPANY,

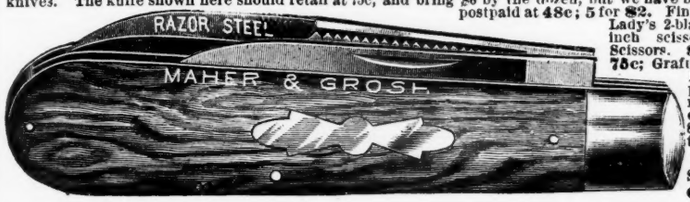
SOLE MANUFACTURERS OF

H. W. Johns' Asbestos Fire and Water Proof Sheathing, Building Felt, Steam Packings, Boiler Coverings, Liquid Paints, Roof Paints, Roof Cement, Fire Proof Paints, etc.

87 MAIDEN LANE, NEW YORK.

WOMEN ARE SLOW

about sending money by mail, and timid about ordering of strangers. We ought to sell 1,000 pair of **SCISSORS** where we now sell one, for nothing is so important in the house. Our goods are **WARRANTED** razor steel and tested; prices are cut down to factory rates. For instance, a 7-inch scissors (the best size) is sent postpaid for **75c**; it will cost in any retail store $1 25. Buttonhole scissors **50c** and **75c**; small scissors, **25c**. Take it in knives. The knife shown here should retail at 75c, and bring $6 by the dozen, but we have been offering them to you postpaid at **48c**; 5 for **$2**. Fine 3 blade pen-knife, **$1**. Lady's 2-blade pearl, **35c**; Seven-inch scissors, **75c**; Knife and Scissors, **$1.15**; Pruning knife, **75c**; Grafting, **25c**; Budding, **55c**; Pruning shears, **90c**, postpaid. Hollow-ground razor, **$1.25**. Best Strop ever made, **50c**. Send for 80p. free list, and "How to Use a Razor."



Maher & Grosh, 4, S Street, Toledo, Ohio.

"ASPINWALL"

POTATO-PLANTER

DISTRIBUTES FERTILIZERS.

PLANTS CORN, BEANS, ENSILAGE, ETC.

The Triumph of Modern Invention.

Mention this paper.

Illustrated Circular sent free.

ASPINWALL MFG. CO., Three Rivers, Michigan.

ISSUES OF THE DAY.

[*Continued from Page* 218.]

value of the farm. The entire management of the loan is confided to the State School Land Board, consisting of the Governor, Secretary of State, and State Treasurer, and is without any cost to the State other than that involved in the salaries paid to the members of the board for their entire official duties, amounting in all to $3,800 per annum. The applicant pays for the examination of the title to his land and its appraisement by the attorney of the board for the county in which the land is situated. The machinery is perfect and comparatively inexpensive, and the security the best in the world. The loans for the whole State are made by the State Board at the Capital, and the distribution of funds throughout the State is fairly made. This system has been a blessing to Oregon farmers, and it may be a blessing to the farmers of the whole country by demonstrating the entire feasibility of loaning government money upon the improved real property of the country.

If the loans were made to the people upon improved real property at the rate not exceeding four per cent, and the currency for such loans, as well as gold and silver, was changeable at will into government treasury notes or bonds bearing interest not exceeding three per cent, the result would undoubtedly be that the issuance of not nearly so much currency would be required as would be if no such provision for funding it was made, inasmuch as investors in government securities would largely furnish the required amount.

If a policy be adopted of changing the currency into bonds, and the bonds into currency, at the will of the holder of either, under the necessary restrictions, the whole financial business of the country could be adjusted to the proposed system without any greater enlargement of the volume of the currency of the country than its actual business requirements demand.

The loaning of money by the government at four per cent would at once fix that rate throughout the country without any other or further legislation.

—*North American Review* for August.

Agriculture In Caricature.

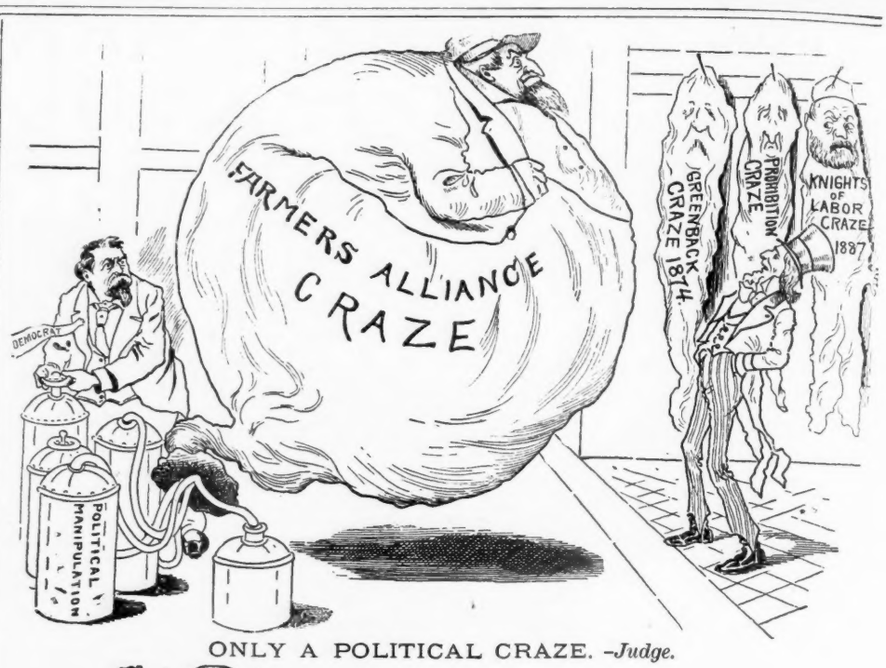
The farmer has been a favorite butt of ridicule for the comic press in America. He has been pictured in all sorts of exaggerated plights and ludicrous positions, and has been generally represented as an unsophisticated country bumpkin. At present, however, the farmers' movement is compelling the metropolitan press to give more respectful consideration to the farmers' wants, in which even the comic press shares. The way in which this movement is treated by the illustrated papers of course differs with their politics or constituency, as appears from the accompanying samples, redrawn with permission for the AMERICAN AGRICULTURIST.

Judge, the great comic organ of the Republican party, deftly caricatures the Farmers' Alliance as "only a political craze." *Judge* represents Uncle Sam as serenely regarding the Alliance boom and remarking complacently—"You look big now, but you will soon burst and go the way of the rest." In proof of this Uncle Sam points to the exploded crazes of recent times engineered by the Knights of Labor, Prohibitionists and Greenbackers.

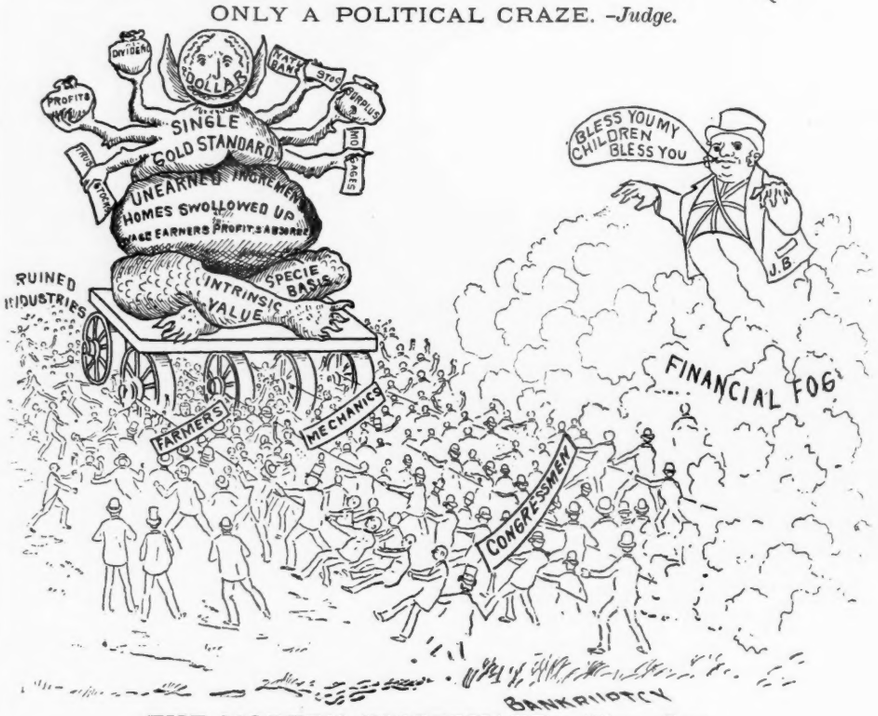
Puck, on the other hand, with its Democratic proclivities, expresses the idea that the Farmers' Alliance is advocating a lot of visionary schemes, the creation of eccentric old men of small brain power. *Puck* believes the Democracy should therefore eschew the Alliance with the same care with which it avoids Republicanism, pursuing the straight and narrow path of political virtue in which *Puck*, of course, thinks it has trod heretofore.

The "reform press" of the Farmers' Alliance represents both parties in Congress helping to pull the car of the modern Juggernaut over the defenseless heads of the farmers and artisans, leaving blighted homes and ruined industries in its trail. The "money power," especially the gold standard and the demonetization of silver, are the pets of the Juggernaut. John Bull bestows his blessing upon the Congressmen who, in the financial fog surrounding them, are about to plunge all industry into the abyss of bankruptcy.

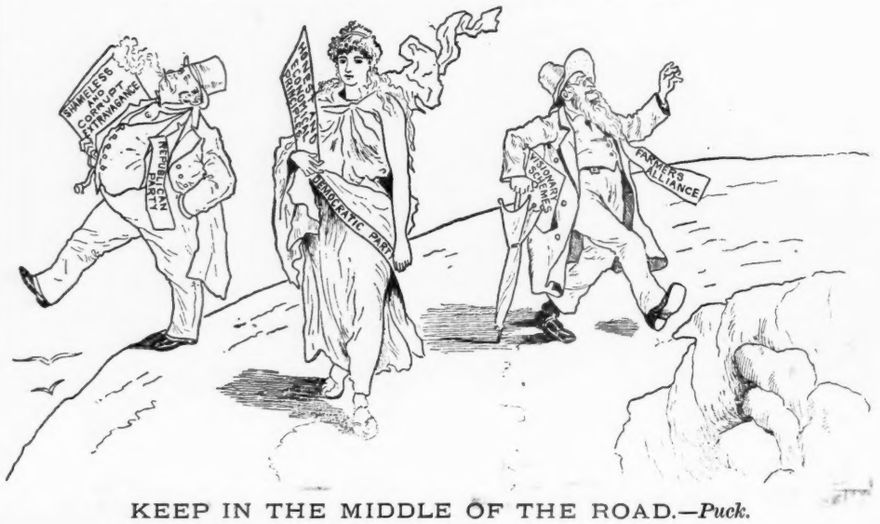
This is a free country. "You pays your money and takes your choice."



ONLY A POLITICAL CRAZE. —*Judge.*



THE MODERN JUGGERNAUT.—*Allianee Press.*



KEEP IN THE MIDDLE OF THE ROAD.—*Puck.*

CHEATING
—IN—
HORSE BLANKETS

Nearly every pattern of 5/A *Horse Blanket* is imitated in color and style. In most cases the imitation looks just as good as the genuine, but it hasn't the warp threads, and so lacks strength, and while it sells for only a little less than the genuine it isn't worth one-half as much. The fact that 5/A *Horse Blankets* are copied is strong evidence that they are THE STANDARD, and every buyer should see that the 5/A trade mark is sewed on the inside of the Blanket.

Ask for 5/A Five Mile, Boss, Electric, Extra Test, Baker

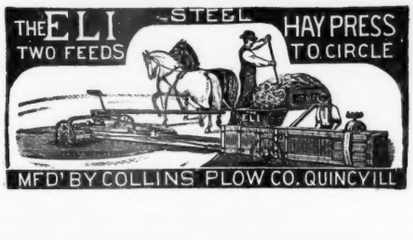
HORSE BLANKETS
ARE THE STRONGEST.
100 5/A STYLES

at prices to suit everybody. If you can't get them from your dealer, write us. Ask for the 5/A Book. You can get it without charge.

WM. AYRES & SONS, Philadelphia.

The somewhat fanciful picture above was suggested by the genuine pleasure and high spirits shown by one of Allen's workers. When he applied to me he was making just a living, or very little more. I taught him. I caused him to go to work, in his present situation, and he quickly began to earn money at the rate of **Over Three Thousand Dollars a Year.** Is there a lesson or suggestion here, for you, reader? Probably you can make just as much money as he. Why not try? I undertake to briefly teach any fairly intelligent person of either sex, who can read and write, and who, after instruction, will work industriously, how to earn **Three Thousand Dollars a Year** in their own localities, wherever they live. I will also furnish the situation or employment, at which you can earn that amount. I charge nothing and receive nothing, unless successful as above. Nothing difficult to learn, or that requires much time. I desire but one person from each district or county. I have already taught and provided with employment a large number, who are making over **Three Thousand Dollars** a year, each. Here is something **new** and **solid**. Full particulars **Free.** After you know all, if you conclude to go no further, why, no harm is done. Those who feel interested are invited to write at once. I promise you my special, personal attention. Address,

E. C. ALLEN, Box 1036, Augusta, Maine.



CANCER, LUPUS AND TUMORS.

Dr. McMichael of Chicago, who has made the subject a special study for twenty-five years, has recently published the **result of his investigations** in his treatise on "Cancer and Tumors." It is a work of sixty-four pages, characterized by plain unvarnished statements and its total absence of extravagant and bombastic claims inspires the confidence of the reader, whose reason and common sense are appealed to. Dr. McMichael is an authority in his special branch of science, and has achieved remarkable success. By his method he succeeds in effecting permanent **cures in 80 per cent.** of cases treated without cutting; while **97 per cent.** of the cases operated upon with the **knife** eventually **die** from return of the disease. The most remarkable features of the work are the **reports of cases** extending over a period of twenty years. In many instances the disease had been **cut out** by surgeons two and three times and then **given up** as hopeless and were afterwards **cured** by Dr. McMichael's method. Copies of the book will be sent free to any address. In writing please send the address of friends who would be interested, and copies will be sent to them also. Address:

It does not advertise a medicine, or any other catch-penny device.

L. D. McMichael, M. D.
180 Wabash Ave., Chicago.

COMMON SENSE IN ILL-HEALTH.

OXYGEN AND OZONE

Oxygen is the great vital element; Ozone the great purifier. Compound Oxygen is Oxygen and Ozone combined. It is a wonderful remedy for diseases of the Blood, Nerves and Kidneys. It purifies the blood, quiets the nerves, repairs the ravages of disease, strengthens, vitalizes and rejuvenates the entire system. It is safe, pleasant, efficient. Cures Rheumatism, Neuralgia, Nervous Prostration, Catarrh, Bronchitis, Incipient Consumption, Asthma, Debility, Insomnia, Headache.

Our treatment differs from all other so called Compound Oxygens. We furnish the gas itself—not a "water solution," that is mostly "water." We give 65 gallons of this vital gas, compressed in a small iron cylinder; inhaled directly; always ready for use; no heat required.

Indorsed by Physicians, Divines, Public and Press. Examine its merits; read what is said of it. Send for our treatise, mailed free to all, showing its common sense and scientific basis, and what it has accomplished. Correspondence invited.

UNITED STATES COMPOUND OXYGEN CO.
SPRINGFIELD, MASS.

EVERY HOUSEKEEPER NEEDS THE PERFECTION

A HOUSEHOLD NECESSITY.

NO HOME COMPLETE WITHOUT IT. SIMPLE TO USE. NEVER WEARS OUT. Made of tin. Most useful, convenient and only perfect article of its kind ever invented. Combines sack or barrel, sifter, pan and scoop. **WILL PAY FOR ITSELF** in a short time by saving waste, time and labor. Keeps out dust, vermin, etc. Preserves flour from mould and mustiness. Enough for baking sifted in one minute. It pleases everybody. Satisfaction guaranteed. Sent by express on receipt of price. To hold 25 lbs., $2.50, 50 lbs., $3.00, 100 lbs., $4.00. **AGENTS WANTED. WRITE FOR CIRCULARS.**

SHERMAN, TANGENBERG & CO.,
26 & 28 W. LAKE St., B. 41, Chicago.

WHEAT FERTILIZER $20 PER TON. Sold to Farmers direct from our Works. *No agents.*

YORK CHEMICAL WORKS, York, Pa.

Early Autumn Dry Goods.

The first Autumn Month is the best in which to make selections of Dry Goods for Fall and Winter Wear.

We shall be glad to have you correspond with our Main Order Department, thus early, in reference to goods in any Department of our store.

Please be as definite as possible in regard to the style, color, and price of articles desired, that the order may be filled intelligently.

James McCreery & Co.,

Broadway and 11th Street,

New York.

KEMP'S MANURE SPREADER

Over 8000 in Use.

IMPROVED FOR 1891.

If you want to grow an extra Ton of Hay or 10 or 15 bu. of **Wheat, top dress** with a light coat of manure. The KEMP SPREADER is the standard machine for doing this work rapidly and economically. We have references from those who have used them for 6 to 8 years. Send for further particulars.

KEMP & BURPEE MFG. CO. Syracuse, N.Y.

WHOSE ANSWERING AN ADVERTISEMENT WILL CONFER A FAVOR UPON THE ADVERTISER AND THE PUBLISHERS BY STATING THAT THEY SAW THE ADVERTISEMENT IN THE AMERICAN AGRICULTURIST.

MATTERS OF BUSINESS.

The Harvest of 1891.

THE AMERICAN AGRICULTURIST'S ANNUAL REVIEW AND ESTIMATION OF THE CROPS OF THE YEAR.

The Prospects in a Nutshell.

	1891.	1890.	Av. 80-90.
CORN.			
Millions of bushels,	**2000**	**1500**	**1700**
Average value on farm,	**50c**	**50.6c**	**40.2c**
Value (millions of dollars),	**1000**	**750**	**675**
WHEAT.			
Millions of bushels,	**500**	**400**	**445**
Average value on farm,	**100c**	**84c**	**83c**
Value (millions of dollars),	**500**	**335**	**368**
OATS.			
Millions of bushels,	**623**	**524**	**578**
Average value on farm	**40c**	**42c**	**32c**
Value (millions of dollars),	**250**	**222**	**185**
GRAND TOTAL.			
Millions of bushels,	**3122**	**2424**	**2723**
Value (millions of dollars),	**1750**	**1300**	**1125**

Better Times Are Surely at Hand for the American farmer. The increased value and supply of agricultural products and live stock may bring our farmers nearly one billion dollars more than they have received of late years. The above summary shows that his three great cereal crops will probably net him $450,000,000 more than he got for the same crops last year. His receipts will be over $600,000,000 more than he has received for these crops on the average during the past eleven years. Cotton and rice will command better prices than last season. Cattle are worth one-third more than eighteen months since, with other stock in proportion. Tobacco is advancing heavily for cigar leaf, hops are firm at good prices, winter fruit will command large values, and all vegetables are yielding fairly with every indication of a remunerative market. The export outlook was never better; immensely increased sums will be sent to the United States for our produce. Ulterior influences may of course interfere with this brilliant prospect, but the AMERICAN AGRICULTURIST confesses that it is beginning to share more freely the hopes of certain well-informed but conservative agriculturists who predict better profits for the farmers of the United States during the next five years than ever before. There will be no return of "war prices," but the money received above expenses will go further and enable the farmer to get more value out of his profits than at any previous period.

Oats Have Improved two points during the month, and the figures of condition indicate a medium yield per acre. The weather at the close of the growing season and during harvest was generally favorable, and late growth was sufficient largely to offset the poor start and deficient stand. The cool weather was favorable. The Department's averages of condition and acreage enable the AMERICAN AGRICULTURIST to estimate the breadth and probable yield as follows: (acreage is expressed in round half-million acres, and yield in millions of bushels, for brevity's sake, thus New York has this year 1,410,589 acres, yielding 31,879,311 bushels, etc.)

	Ac'rs pl'd			*Con. Aug. 1*			*Tot. Y'ld*		
	'91	'90	'89	'91	'90	'89	'91	'90	'89
New York	14	13	14	92	65	86	32	24	36
Pennsylvania	12	13	13	91	62	99	27	22	35
Ohio	11	11	12	86	62	98	24	20	37
Michigan	9	9	9	86	83	99	24	25	30
Illinois	31	34	39	86	60	97	72	71	145
Wisconsin	15	15	15	89	83	101	44	39	53
Minnesota	15	15	16	94	92	94	41	38	53
Iowa	28	28	27	98	83	100	83	71	99
Kansas	12	13	14	90	67	87	37	31	38
Nebraska	13	11	11	96	70	87	34	22	30
United States	259	264	275	89.5	70.1	92.3	622	524	752

Spring Wheat advanced in condition during July. The improvement was general throughout the whole breadth, according to the Department's August returns, except in Washington, where hot winds injured the prospects in some districts. The acreage and prospective yield are estimated by the AMERICAN AGRICULTURIST from the Department's reports for the spring wheat belt, the winter wheat belt, other States and the whole country, compared with 1890 and 1889. There is a considerable increase in area, enormous in some States, and a crop equaling the famous product of two years ago. The foreign shortage is such, however, that farmers are pretty sure of one dollar per bushel on the farm in the great wheat States, provided discretion is used in marketing and shipments are not forced. In the following tables, acreage is stated in round half millions (500,000) of acres and yield in millions of bushels, for brevity's sake; thus, New York has some 600,000 acres in wheat this year, yielding nearly 10,000,000 bushels. Apparent discrepancies in totals are due to omissions of smaller figures.

COMPARATIVE STATEMENT OF THE WHEAT CROP.

The Spring Wheat Belt.

	Acreage.			*Con'n Aug. 1*			*Total Yield.*		
	'91	'90	'89	'91	'90	'89	'91	'90	'89
Wisconsin	11	11	12	79	80	90	13	13	17
Minnesota	32	31	31	98	80	93	46	38	45
Iowa	17	17	16	95	87	94	23	19	21
Nebraska	15	14	14	97	71	91	21	15	17
Dakota	44	42	44	99	88	57	44	40	42
Washingt'n.	5	4	4	90	97	75	11	8	7
Total	124	120	123	95	83	81	157	134	149

The Winter Wheat Belt.

New York	6	6	6	96	96	96	10	9	9
Pennsylva'ia	13	13	14	98	95	96	17	16	17
Georgia	3	3	4	98	52	94	2	1	2
Texas	5	5	6	96	48	86	5	4	6
Ohio	24	24	25	97	82	88	35	30	37
Michigan	16	15	16	89	75	89	27	20	24
Indiana	26	25	28	99	67	89	32	28	41
Illinois	22	19	24	98	66	94	34	18	38
Missouri	21	16	16	98	74	94	29	18	21
Kansas	31	21	17	94	82	98	47	28	31
California	29	24	33	98	82	97	40	29	44
Total	198	121	189	96	74	93	278	144	271

Summary for the Whole Country.

Spring belt	124	120	123	94	84	80	157	134	149
Winter belt	198	121	189	96	74	93	278	144	271
Other States	51	120	69	....	....	....	64	121	170
Total U. S.	373	361	381	96	76	92	499	399	491

A Magnificent Corn Crop, almost rivaling the unprecedented yield of 1889 and nearly 50 per cent greater than last year's abnormally short crop, is almost assured. It is true that the season was late in most sections up to the first week in August, but the hot wave of the following week pushed the crop grandly, though it cannot yet be said (Aug. 15) that the crop is sure to mature properly. During July its condition, as reported by the United States Department of Agriculture, fell off two points, the decline being almost entirely in the States of the Ohio Valley and the Northwest. The decline was due to dry weather and low temperature in all portions of the corn surplus districts. East of the Allegheny mountains and in the South conditions were favorable and State averages advanced.

If the present promising condition meets no unusual setback the AMERICAN AGRICULTURIST expects the '91 crop will touch the two-billion bushel mark, but with the prospects for high-priced wheat and other produce we do not expect the low values of 1889 for corn. On the present showing for a tremendous yield it is natural to suppose that only an unheard-of shortage abroad can maintain for this crop the high values of the 1890 crop.

The AMERICAN AGRICULTURIST'S estimates for the 1891 crop, based on present conditions as reported by the Department of Agriculture, are as follows, with figures from the great corn surplus States in detail (the acres are expressed in round half millions—500,000s, and the yield in round millions of bushels):

COMPARATIVE TABLE OF THIS YEAR'S ACREAGE AND PROBABLE YIELD OF CORN.

	Acreage		*Condit'n*		*Aug*	*Total Yield.*		
	'91	'90	'91	'90	'89	'91	'90	'89
Ohio	28	28	93	66	87	90	66	89
Indiana	36	36	88	70	87	107	89	107
Illinois	77	72	88	71	90	243	187	251
Iowa	90	88	90	85	100	312	232	350
Missouri	67	68	87	72	96	205	175	219
Kansas	65	35	88	43	102	209	55	241
Nebraska	40	31	89	69	101	133	55	150
United States	789	720	90.8	73.3	94.8	2,010	1,490	2,113

The American Apple Crop will be better this season than last year, when it was less than in any year since 1883. According to special reports from the commercial apple-growing regions of the United States and Canada, published in the *New England Homestead*, of Springfield, Mass., on Aug. 15, Baldwins will be scarce, and prices for the best marks of winter apples will it is believed run from two to four dollars per barrel at New York in the course of the winter. The *Homestead* predicts the United States surplus for export at 235,000 barrels, and Canada 200,000, a total of 435,000 barrels, or about the same as last year, against 681,000 barrels of the 1889 crop, and 1,401,382 barrels of the 1888 crop. The English crop is short, and prospects are excellent for American apples in that market, which takes ninety-five per cent of American exports. Apples are comparatively light in the Central and Western States, the commercial orchards of Arkansas and Missouri having more than they can do to supply interior markets. There is a heavy yield of all fall fruits—peaches, pears, grapes, and apples—but as soon as these are out of the way the *Homestead* expects profitable prices. If California shipments of her fine crop of all fruits are delayed until that time they will meet almost as good prices as were reported last year, which caused unprecedented prosperity to the industry on the Pacific slope.

Other Crops.—Barley shows improvement and promises a large crop. California returns condition at 100, or practically perfect. In New York and Wisconsin, however, the prospect is less favorable. The first return for buckwheat is the highest for eight years, with slight increase in acreage. The condition of potatoes is returned remarkably high, a point over last month. Should the present prospect be continued, the crop will be one of unusual proportions. Spring rye is most promising, and a large, heavy crop has been secured. The condition of these crops, Aug. 1, as reported by the Department, compares as follows, 100 representing a full average for the entire United States:

	1891.	1890.	1889.	1888.
Barley	93.8	82.8	90.6	89.4
Buckwheat	97.3	90.1	95.2	92.5
Rye	89.6	86.8	95.4	91.4
Potatoes	96.5	77.4	94.3	93.2
Tobacco	88.5	69.2	88.4	92.3
Hay	90.9	93.6	94.5	91.9

Tobacco and Hops.—Cigar-leaf tobacco promises to be the best ever grown in New England, New York, Pennsylvania, and Wisconsin. The market is already excited, and the new crop is being contracted for at twenty-five and fifty per cent higher than was paid last year. The advance is ascribed to the practical exclusion of Sumatran leaf by the tariff, which in the McKinley bill is increased from thirty-five cents to two dollars per pound on cigar wrappers. Hops promise a fine yield in New York, but are uneven on the Pacific slope. The English crop is in fine condition, but Germany, which furnishes eighty-five per cent of American imports, has quite an uneven crop, with much damage by lice. The dealers' attempt to contract the new State crop at ten cents has failed and growers expect prices of twenty to thirty cents per pound.

The Condition of Cotton is 88.9 for the whole breadth, practically the same as last month. The improvement during the month has been confined to portions of South Carolina, Georgia, Alabama, Mississippi and Arkansas. In other portions of the cotton belt there has been a decline in condition. There was an excess of rainfall except in Louisiana and Florida and the greater part of Texas, and this excess of moisture was, as a rule, accompanied by a temperature below the normal. The crop is generally late, especially in the Atlantic and Eastern Gulf States, the plant small and the stand imperfect over considerable areas. In the Carolinas heavy rains caused some shedding of bolls and failure of the plant to fruit well. In Georgia and Alabama some improvement is noted. The plant is small and late, but fruiting well. The crop in Mississippi is late, but making good growth. Louisiana returns are variable, some damage from local drought, but more from excess of rain. The decline in Texas is mainly the result of drought. Only Texas reports caterpillars and boll-worms from more than one county, except Arkansas, where the worm is noted in two. The Department estimates of condition, and the AMERICAN AGRICULTURIST'S own data as to acreage lead to these comparisons:

	Acreage.		*Condi'n*	*Aug.* 1.
	1891.	1890.	'91	'90	'89
Virginia	39,843	41,503	81	93	63
North Carolina	1,026,455	1,091,973	75	96	80
South Carolina	1,626,450	1,694,218	83	95	90
Georgia	2,873,046	3,024,259	86	94	91
Florida	265,111	267,789	94	90	95
Alabama	2,786,842	2,902,960	89	93	90
Mississippi	2,516,672	2,649,128	99	90	88
Louisiana	995,388	1,036,862	90	89	92
Texas	4,598,326	4,379,358	92	82	91
Arkansas	1,351,560	1,407,875	99	85	93
Tennessee	837,400	881,473	82	93	78
United States	18,917,093	19,096,414	88.9	89.5	89.3

On the above basis the AMERICAN AGRICULTURIST has as much grounds for estimating the 1891 crop at a trifle over 7,250,000 bales as we had for expecting the product of the two past years. Of course September and October may be decidedly different this season from last, but the AMERICAN AGRICULTURIST'S estimate is for the crop in its

present state. The two past crops have averaged 495 pounds per bale, while our data is placed at 500 pounds per bale as sufficiently accurate at this early season. For the past ten years the average weight per bale as marketed has been 486½ pounds. The probable new crop should therefore command better prices than last year's, which must improve as the present surplus is worked off. Our estimates compare thus:

	1891.	1890.	1889.
Condition Oct. 1.	88.9	89.5	89.3
Acres	18,917,093	19,096,414	18,714,486
Bales	7,339,832	8,064,000	7,313,726
Bales per acre	0.388	0.422	0.391
Pounds per acre	194	211	196

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The conventions negotiated with Brazil, the Spanish West Indies and Santa Domingo will facilitate the exchange of non-competing produce of different zones. The United States has offered to all Southern countries a free market for their coffee, sugar, molasses and hides, but has required them in return to admit its food products and manufactures on equitable terms. If they fail to enter into reciprocity engagements before January 1, 1892, the President is empowered to suspend the free market and to restore duties on their coffee, sugar, molasses and hides.

The offer has been accepted by Brazil, which in 1890 supplied 310,005,021 pounds of coffee in a total importation of 499,159,120 pounds received in the United States; by Spain on behalf of Cuba and Porto Rico, from which was drawn forty-two per cent of the sugar imported in that year; and by Santa Domingo, which shipped to the same market 1.7 of the sugar supply, and 242,954 pounds of coffee. The total imports from the three countries into this market in 1890 were $119,124,986 and the exports taken from the United States in return were $28,280,818. The natural result of reciprocity will be a readjustment of these trade relations through a large increase of American exports.

The benefits of this expansion of American trade will be shared by farmers and manufacturers, but not on equal terms. The farmers will have the advantage over the manufacturers for two reasons: First, because the free lists and reduced schedules impose fewer restrictions upon the introduction of their produce; and, secondly, because there is less need of adapting what they have to sell to the requirements and tastes of Southern consumers. Manufacturers of boots and shoes, cotton goods and hardware will have to furnish the styles, patterns, qualities and grades which are wanted in those markets. The Southern trade will be more or less of a specialty with them. The produce of American farms is adapted in the main for any market. Breadstuffs, hay, oats, potatoes, beans, peas, vegetables, fruits, pork, bacon, meat, tallow, lard, butter, cheese, canned goods, pickles and preserves are as well adapted for one hemisphere as for the other; and these are among the chief agricultural staples which will be introduced on a large scale in these Southern markets.

In this article breadstuffs alone will be taken up in detail. Under the convention with Brazil the free list includes wheat, wheat flour, corn or maize, corn meal, starch, rye, rye flour, barley, buckwheat and its flour. Wheat was practically free before the treaty was made, about five per cent covering the port and provincial charges. All the other cereals and their manufactures have been taxed fifteen per cent, and these duties have been re-

(*Continued on Page* 528).

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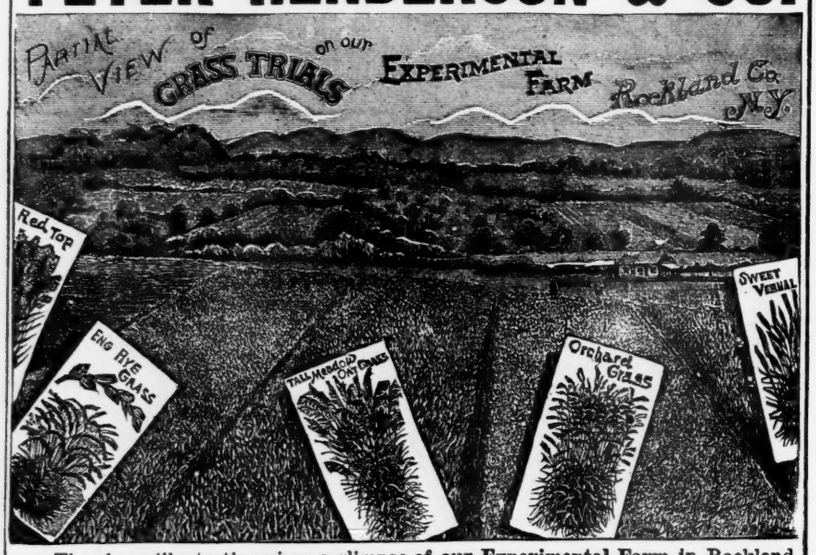
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(*Continued from Page* 517.)

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MODERN CEMETERIES: An Essay upon the improvement and proper management of Rural Cemeteries; by J. Weidenmann, Landscape Artist; paper, pp. 115. The Monumental News, Chicago, Ill.

In this treatise the author embodies the principles of what should constitute a rural cemetery. A lifelong experience in this special branch of landscape engineering enables him to speak from a thoroughly practical point of view. The work is fully illustrated with plans of grounds, family vaults, etc. Sold by the Orange Judd Co.; price $1.50.

HOW TO RID BUILDINGS AND FARMS OF RATS and Other Pests of similar character. By "Pickett"; paper, pp. 32. Rural Pub. Co., New York.

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SHORT NOTES.

"The People's Horse, Cattle, Sheep, and Swine Doctor" is the pretentious name of a small book just published by M. T. Richardson. It is a compilation from familiar authors illustrated by old-fashioned cuts familiar to every reader of books of this kind. It is mainly useful for its brevity, but necessarily at the sacrifice of reliability. Price $1 postpaid from the Orange Judd Co.

"The Principles of Agriculture for Common Schools" is the title of a handy little manual of 152 pages, by Prof. I. O. Winslow, a leader in Maine educational affairs and a practical farmer. The book is well designed for its purpose. It is published by the American Book Co., and may be had of the Orange Judd Co. for 60c postpaid.

"Sundry Papers on Horticultural and Kindred Subjects," contributed from time to time by William Saunders, superintendent of the gardens and grounds of the United States Department of Agriculture, have been published as a special bulletin, which may be obtained upon application to the Secretary of Agriculture.

STATION AND DEPARTMENT REPORTS.

THE UNITED STATES DEPARTMENT OF AGRICULTURE issued during July, from the Division of Statistics, Report No. 86 on the area of corn, potatoes, tobacco, the condition of growing crops, and freight rates; Report No. 3 of fiber investigations, on sisal hemp culture. Division of Forestry—Bulletin No. 5, what is forestry? Division of Botany—List of plants collected by Dr. Edward Palmer in 1890, in Western Mexico and Arizona. Office of Irrigation Inquiry—Report of special agent in charge of artesian and underflowing investigation and of irrigation inquiry for 1890; progress report on irrigation, Part 1, and Part 2 on artesian and underflow investigations between the ninety-seventh degree west longitude and the foot-hills of the Rocky mountains. Office of Experiment Station Bulletin No. 2, digest of annual reports of the agricultural experiment stations in the United States for 1888, Part 2.

CALIFORNIA—Exp. Sta. at Berkley, Bul. 93, June 25, investigation of California oranges and lemons.

DELAWARE—Exp. Sta. at Newark, Bul. 13, July, leaf blight of the pear and quince.

ILLINOIS—Exp. Sta. at Champaign, Bul. 16, May, on pig feeding and testing composite milk samples for butter fat.

IOWA—Exp. Sta. at Ames, Bul. 13, May, on feeding for milk, treatment of fungous diseases, insects destructive to grass, relative hardness of blossoms of the orchard fruits, and contaminated water supply for live-stock.

LOUISIANA—Exp. Sta. at Baton Rouge, Bul. 10 (second series), on systematic feeding of work stock as a preventive of disease, and some diseases of farm animals.

MISSISSIPPI—Exp. Sta. at Agricultural College, Bul. 15, June, feeding and milk testing apparatus.

NEW JERSEY—Exp. Sta. at New Brunswick, Bul. 81, July 1, incomplete fertilizers and home mixtures; 82, July 3, the rose chafer or rose bug.

NEW YORK—State Exp. Sta. at Geneva, ninth annual report, 1890. Cornell station at Ithaca, Bul. 28, June, experiments in forcing tomatoes.

NORTH CAROLINA—Exp. Sta. at Raleigh, annual report of the Meteorological division, 1890.

WEST VIRGINIA—Exp. Sta. at Morgantown, Bul. 14, farm and garden insects; 16, forest and shade-tree insects and the yellow locust; 17, forest and shade-tree insects and the black spruce.

WISCONSIN—Exp. Sta. at Madison, Bul. 28, July, the construction of silos.

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Public speakers, actors, auctioneers, teachers, preachers, and all who are liable to over-tax and irritate the vocal organs, find, in **Ayer's Cherry Pectoral,** a safe, certain, and speedy relief. It soothes the larynx, allays inflammation, strengthens the voice, and for whooping cough, croup, sore throat, and the sudden colds to which children are exposed, this preparation is without equal.

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a few doses of Ayer's Cherry Pectoral. This remedy, with ordinary care, has worked such magical effect that I have suffered very little inconvenience."

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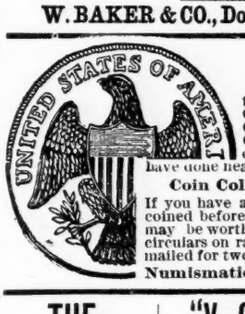

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ANIMAL AILMENTS.

Breeding Sows.—Joseph Lines, Douglas Co., Kan., writes: I have several fine Berkshire sows that I am desirous to breed. I have several times failed. What shall I do? Turn your sows out to grass and feed very sparingly, so as to reduce them in flesh. Berkshires are very liable to become so fat as to interfere with the function of breeding.

Gangrene of the Tail of a Cow.—Charles Depew, Fayette Co., West Va., has a cow whose tail has been sore on the end for some time and discharges an offensive matter. Wash it with carbolic soap and keep it bound up. Once a day paint the sore well with tincture of iodine and apply lint wet with a solution of ferric alum, a dram to four ounces of water.

Tuberculous Diarrhœa.—This is a malady dependent upon a fatal disease, and can only be ameliorated by giving dry fodder and emollient drinks in which laudanum is given in small doses. Old cows, drained by excessive milking, thin in flesh and having a cough, are subject to this trouble. The skin, hoofs and horns are all that is of value in the possession of such cows. The milk is more poisonous than nutritious.

Contracted Hoofs from Neglect.—H. B. Smith, Tuscarawas Co., Ohio, has a valuable horse he left in the stable three months during absence on business, and found when he returned that the horse had contracted hoofs from the long wearing of shoes. It would have been easy to prevent a trouble not so easily remedied. Remove the shoes, pare down the hoofs and turn the horse out to pasture. But if required for use, drive without shoes.

Harness Galls.—A. Loweree, Lawrence Co., Mo.: During just such weather as is usual in the early fall, horses suffer from harness galls. The parts abraded should be washed clean, when the harness is removed for the day, with cold water after cleaning with soap and water. Then a solution of ferric alum, a dram to a pint of water, to which half a pint of alcohol is added, should be applied on linen cloth by dropping gently for a minute or two. This will heal the sores and toughen the skin so that galls will not readily occur.

Dressing Horses and Cattle with Kerosene.—Inquiry is frequently made as to the best method of grooming long haired horses and cattle for show. After a good cleaning the finishing gloss can be secured by rubbing the coat with a flannel cloth moistened with kerosene. Rubbing both with and against the hair removes the dandruff more perfectly. Horse and cow jockeys resort to this practice to make the coat glossy. Of course, if a lighted match should be thrown upon the animal just dressed an unpleasant and unsightly singed animal might result. This would be worse than clipping.

Pneumonia in Sheep.—L. Miller, DeKalb Co., Ill.: Simple pneumonia is very common in sheep in cold wet weather. No domestic animals suffer so severely from bad atmospheric conditions as sheep. Their heavy coats of wool when once wet require a long time and favorable circumstances to dry. Hence, the bad effects of cold draughts or winds in this condition. Housing and proper protection are imperative in sheep husbandry. Lambs that are dropped in bad weather and unseasonable times suffer for a long time, if not for life, thus transmitting feeble and delicate constitutions to their progeny.

Emetic to a Horse.—Sylvester Storrs, Somerset Co., Me., wishes to know if he can give an emetic to a horse. Certainly, but it will not produce vomiting, though it will greatly distress the horse and produce greater or lesser injury to him. It is one of the worst methods that can be resorted to, to administer harsh and powerful drugs to dumb brutes who cannot complain, but only suffer. If such treatment is forced upon mankind they can rebel, refuse or denounce the outrageous practice. Many quacks and even "regular" practitioners will be held to an account in the "final trial" for the evil deeds done to dumb brutes.

Hair Growing Through the Lid of the Eye—Trichiasis.—R. S. Sutton, Putnam Co., N. Y., wishes to know what is the matter with the eye of his driving horse. It weeps and the horse rubs it so often that when in harness he spoils the blinder and bridle. There is probably a hair or winker pushed through the lid. With a pair of strong tweezers applied close to the inside of the lid a firm, straight pull will remove it. A few drops of rose water applied after removal will remove all irritation. Can moon blindness be cured? Doubtful; a careful examination by a good veterinarian would be required to determine the case.

Consumption in Domestic Animals.—P. L. Wilson, Essex Co., N. Y.: Cows are more liable to consumption than any other domestic animals. There are several reasons for this liability in the cow. She is bred before maturity and too often from premature and diseased dams. There is no disease that afflicts animals more liable to be transmitted than consumption. Then the cow is perpetually bred and milked until disease or death terminates her existence. If a yielder of profitable products her progeny are reared to go through the same exhausting processes. This can be avoided by slaughtering cows in middle life before premature decay or wasting disease afflicts them. Another preventive of consumption in cattle will be breeding only from mature and perfectly healthy animals.

Heart Disease of the Horse.—O. B. Langdon, New York: The sudden death of horses is very frequently from heart failure. A horse drops dead in harness without apparent illness. It is of importance to know the cause of death, as in many cases such fatality may be prevented by care, judicious working, moderately slow driving and proper feeding. Undoubtedly high feeding and fast work operates injuriously upon the hearts of horses. Running and trotting horses often die of heart disease. But, as a rule, these animals are more judiciously cared for than any other classes of horses. Personal experience in the management of racing horses is one of the chief elements of success. Horses fed concentrated food should have the sanitary change which pasturing for periods gives.

Retention of the After-Birth.—N. Robinson, Merrimack Co., N. H.: The retention of the afterbirth for a day or two or even more, until decomposition takes place, does but little harm beyond causing anxiety. A hot slop or a stimulant will remedy the trouble in nine cases in ten. But there is generally exhaustion, debility or other causes which require prompt attention. In all these cases appropriate treatment will be required. If constipation exists, a pound of linseed oil should be administered, or a pound of Epsom salts, powdered ginger an ounce, and an equal quantity of caraway seed given in a quart of warm ale will have the desired effect. Wheat bran with a pint or two of wheat middlings should be given as a warm slop night and morning.

Abortion in Cows.—H. Carpenter, White Co., Tenn.: Cases of occasional abortion are of but comparative insignificance when compared to the epizoötic form of the trouble. It seems epidemic or contagious in many districts. Much can be done by timely giving tone and strength to the whole herd at the earliest appearance of the evil. Iron tonics enrich the blood very promptly. Powdered sulphate of iron two drams, powdered gentian root half an ounce, mix and give at a dose twice daily. Stirred in the slop will be the least trouble, but if refused it may be given mixed with molasses and put upon the tongue with a piece of smooth shingle, or wooden spatula. The aborters should be removed from the herd. A large roomy boxstall should be provided for calving cows.

Canker of the Ear.—Mrs. N. Hager, Kings Co., N. Y.: This is a common disease of the long-eared water dogs and those dog pets who are perpetually overfed. The symptoms of canker of the ear are what doctors call *pathognomonic*—indicating positively the disease, frequent shaking of the head, and when severe it calls forth a yelp from pain. Cleanliness or cleansing the ears with castile soap suds, then using sugar of lead one dram to four ounces of rose water or rain water. A teaspoonful poured into the ear night and morning. A dram rubber syringe is a convenient means of cleaning and applying the remedies. It should be used with gentleness. Overfeeding with meat, and plunging into the water, or sleeping in cellars, or draughts are injurious. Spaniels and St. Bernards are especially liable to canker. Idle dogs, like idle men, get into trouble.

Poisoned Animals.—Tredwell Black, Cedar Co., Iowa, writes us: "I have had two cows and a colt poisoned on my farm some miles away, and fearing the repetition of the vile act I would like to know what to do as soon as the poisoning is discovered." First, put a detective at work to catch the villain who would inflict such fearful suffering upon innocent brutes. Then, there are three things to promptly attend to: 1, the dilution or neutralization of the poison given; 2, the protection of the delicate and highly organized tissues upon which the poison would act; and 3, the speediest methods of expelling the poison. Pour down the animal's throat large quantities of milk and a pint of linseed oil as soon as possible, followed by repeated doses of well boiled starch or flour gruel, cold. Linseed oil is the best and safest physic for cattle, but horses should have aloes balls. The pain may be assuaged by laudanum in doses of an ounce repeated in starch or gruel. The shock or weakness may be overcome by small repeated doses of whisky. Milk and well cooked flaxseed meal and flour are the foods that should be given until relief is secured. This should be done before the veterinarian arrives, though he should always be sent for at once. Roots cut small may be given to sick animals in moderate quantities even in severe sickness.

Cure for Hard-Milking Cows.—I. P. Nichols, Delaware Co., N. Y., writes us that he has for several years treated hard milking cows with the little appliances shown in the illustration. They are simply the "barrels" of quills from hens' wings, open at both ends and the pith punched out. The large end is then split up about a quarter of an inch into four equal quarters which are rolled up, as shown in the engraving, being first softened by pressing against a hot stove. When the quills are prepared the cow is tied in her stall, the teat is pressed until the milk starts, the opening is gently dilated by pressing into it a pointed round stick of hard wood, smooth and oiled. When this is withdrawn one of the quills is inserted in the opening of the teat and allowed to remain there three or four days, by which time the opening is permanently dilated. In some cases the teats are so tight that it is necessary to open them by a slight incision. This is made by carefully inserting an instrument made by flattening one end of a steel wire and grinding the pointed end to a double edge, as shown in Fig. 2. In any case it is best to operate on only one or at most two teats the same day. Mr. Nichols adds that quills produce less irritation and are more conducive to rapid healing than wood or any metal.

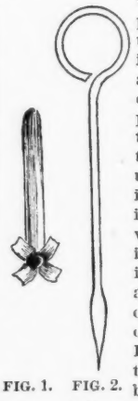

FIG. 1. FIG. 2.

Catalogues Acknowledged.

D. H. BURRELL & Co., (formerly Burrell & Whitman), Little Falls, Herkimer Co., N. Y.: A special catalogue of cheese and butter manufacturers, dairymen and agriculturists. This is a very large handsome pamphlet, giving plans and specifications for the erection of cheese factories, creameries and cold storage houses with instructions, directions and useful information regarding the manufacture of butter and cheese, together with illustrations and descriptions of all the necessary apparatus and appliances; also special catalogue of cheese factory apparatus.

A. BLANC & Co., Philadelphia, Pa.: Descriptive and illustrated catalogue of bulbs for winter and spring planting.

CORNISH & Co., Washington, N. J.: Illustrated and descriptive catalogue of the celebrated Cornish pianos and organs.

J. S. & W. G. CROSBY, Greenville, Mich.: Catalogue of Shropshire Sheep; also Shire, Clydesdale, and Cleveland Bay Horses, Shorthorn and Jersey cattle, and Poland-China swine. Several full-page illustrations.

ELLWANGER & BARRY, Rochester, N. Y.: Catalogue of pot-grown and layer strawberry plants; also list of bulbous flowering roots and specialties for fall planting.

VILMORIN-ANDRIEUX & Co., Paris, France.: Catalogue of flowering bulbs and strawberries; also flower and vegetable seed suitable for fall sowing. A remarkably large and choice collection.

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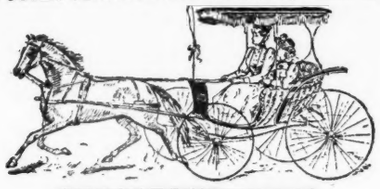

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Do your own Shelling and Grinding at Home, saving tolls and teaming to and from the Grist Mill. This work can be done rainy, windy days, when out-door work is suspended on the farm. The same Mill will cut corn stalks, saw wood, run churn, grindstone, pump water, etc. We make the

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in 11 sizes, 1½ to 40 horse power, and GUARANTEE they have no equal for Power, Durability and Storm-Defying Qualities.

Horse Powers

and **JACKS** both single and double Geared, made heavy and strong.

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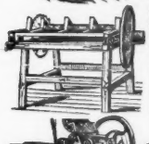

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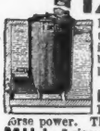
3 sizes, both Belt and Geared Mills. Can be run by any power, and especially adapted to Wind Power. Will grind any kind of grain, and is the lightest running and most effective Feed Grinder made.



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For warming water in Stock Tanks. Made of the best quality of iron cast in one piece, no sheet iron to rust or solder to melt and cause leak. Will burn any kind of fuel. It is very effective and takes less care to operate than any other Heater made.

We also make the

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18 sizes; 8 to 60 ft. diameter, and one man to 40 horse power. The **U. S. SOLID WHEEL WIND MILL,** 7 sizes. **Iron** and **Brass Pumps** in great variety. **Tanks** all kinds and sizes, and the **Standard Hay Tools** consisting of **Anti-Friction, Swivel, Reversible** and **Rod Hay Carriers, Harpoon** and **Grapple Horse Hay Forks, Pulleys, Floor Hooks, etc.** All goods fully guaranteed. Send for Catalogue and Prices. **Reliable Agents wanted** in all unassigned Territory.

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QUICKLY DISSOLVED AND REMOVED WITH THE NEW SOLUTION

MODENE

AND THE GROWTH FOREVER DESTROYED WITHOUT THE SLIGHTEST INJURY OR DISCOLORATION OF THE MOST DELICATE SKIN.

Discovered by Accident.—In Compounding, an incomplete mixture was accidentally spilled on the back of the hand, and on washing afterward it was discovered that the hair was completely removed. We purchased the new discovery and named it MODENE. It is perfectly pure, free from all injurious substances, and so simple any one can use it. It acts mildly but surely, and you will be surprised and delighted with the results. Apply for a few minutes and the hair disappears as if by magic. It has no resemblance whatever to any other preparation ever used for a like purpose, and no scientific discovery ever attained such wonderful results. **IT CANNOT FAIL.** If the growth be light, one application will remove it permanently; the heavy growth such as the beard or hair on moles may require two or more applications before all the roots are destroyed, although all hair will be removed at each application, and without the slightest injury or unpleasant feeling when applied or ever afterward.—MODENE SUPERCEDES ELECTROLYSIS.—

—RECOMMENDED BY ALL WHO HAVE TESTED ITS MERITS—USED BY PEOPLE OF REFINEMENT.—

Gentlemen who do not appreciate nature's gift of a beard, will find a priceless boon in Modene which does away with shaving. It dissolves and destroys the life principle of the hair, thereby rendering its future growth an utter impossibility, and is guaranteed to be as harmless as water to the skin. Young persons who find an embarrassing growth of hair coming, should use Modene to destroy its growth. Modene sent by mail, in safety mailing cases, postage paid, (securely sealed from observation) on receipt of price, **$1.00** per bottle. Send money by letter, with your full address written plainly. Correspondence sacredly private. Postage stamps received the same as cash. (ALWAYS MENTION YOUR COUNTY AND THIS PAPER.)

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GOULDS & CALDWELL CO., Mfrs. 22 & 24 N. Canal St. Chicago, Ill.

MATTERS OF BUSINESS.

(*Continued from Page* 523).

moved by treaty from American products. The following table shows the sources and amounts of breadstuffs recently imported into Brazil:

AVERAGES OF THREE YEARS.

	From United States.	*From Other Countries.*
Wheat flour	$2,778,353	$814,329
Wheat	150	547,845
Corn and manufactures	21,369	695,285
Rye and flour		555,737
Barley, buckwheat		193,286

These averages are below the existing state of the trade in breadstuffs. In 1890 the total valuation of breadstuffs exported from the United States to Brazil was $4,973,656, and these figures do not include large shipments of flour in ballast to Hamburg, Liverpool and Lisbon, whence it was transhipped by European lines. The chief rivals which the United States has in supplying that market with flour are Austria-Hungary and the Argentine. Against these countries it will have a discrimination of fifteen per cent on all breadstuffs, wheat alone excepted. This advantage in wheat flour will enable us to displace the Trieste flour which has been entering Bahia and Rio in increasing quantities during recent years.

Wheat has been practically free for all countries because under the Empire strenuous efforts were made to establish steam flour mills at Rio and other coast towns. This industry was introduced in 1887 when the duty on American flour varied from sixty-five to seventy-five cents a barrel with the rate of exchange. As Brazil does not produce wheat, and there is no coal for providing cheap steam power, this artificial industry has languished, and by the admission of free flour from the United States is practically abandoned.

When attempts have been made to raise wheat in the highlands of Brazil near Campinas it has been found necessary to weed the fields by hand two or three times a season. In the extreme Southern provinces there is a good pasturage land, but it is not available for wheat-raising, the crop being light and of inferior quality.

Steam-milling in Brazil with imported coal and machinery is an industry that will be dependent upon supplies of grain from the Argentine, which is favored by shorter lines of communication than the United States. In 1889 the Argentine's wheat production was 11,350,000 bushels (against 490,560,000 for the United States) and of this only 954,921 bushels were exported to all countries. The largest export of wheat from the Argentine in ten years was in 1883, when it amounted to 3,835,093 bushels. With freight rates by the American steamers as low as ninety cents a barrel to Para, and $1.10 to Rio, and with these charges heavily reduced by sailing vessels, American flour relieved of a duty averaging seventy-five cents will unquestionably hold the Brazil market.

One thing that is needed for the development of this flour trade is a better barrel. The secret of the recent success of Austrian millers in increasing very largely their exportations to Brazil is better packing. In quality the Trieste flour is not better nor is it cheaper than American flour, but it is shipped in barrels that will stand knocking about. The American barrel is handsomer to the eye, but weaker in the joints. Under rough handling the staves burst apart, the heads are knocked in and the hoops come off. The Trieste barrel looks like an ugly lime barrel, but it holds together. The staves are closely fitted together, the heads are firmly fastened and additional hoops are bound about them. It is adapted to the conditions of transportation in a country where there are no landing wharves, where merchandise is flung into lighters from steamers, carried by ox-teams to warehouses and taken on a mule's back hundreds of miles into the interior over the worst roads imaginable. American barrels are constantly smashed in the holds of vessels or on lighters, and for this reason a strong prejudice has been created in favor of Trieste flour. American flour for the Brazil trade must be packed in strong, well-made barrels securely fastened by hoops.

In Cuba and Porto Rico American breadstuffs are brought into competition with Spanish farm products. Before 1884 there were discriminating duties in favor of Spanish vessels as well as Spanish breadstuffs. In that year the flag duties amounting to eighty-two cents on a barrel of flour were abolished; but the discrimination against American flour was increased year by year by the removal of the duties on Spanish breadstuffs, effected on a sliding scale. On July 1, 1890, Spanish flour was free, the last percentage of fifteen having been taken off; but on American flour the duty was $4.50. At that date twenty per cent was added to the duties on all imports received in Cuba. This, with additional port charges, raised the discrimination against American flour to $5.62½ a barrel. The effect was to drive that flour out of the market, as appears from this comparison of Cuban imports of our flour:

	Barrels.	*Value.*
1888		$1,846,419
1889	243,133	1,190,494
1890	255,820	1,164,538
June 30 to Dec. 30, 1890	73,683	377,383
Jan. 1 to July 1, 1891	40,764	214,503

In consequence of the increased duty of twenty per cent, added when Spanish flour was free, American flour was disappearing from the market when the reciprocity negotiations were undertaken. Only a small amount of American flour of the highest grade would have been used by Cuban bakers if the tariff schedules had been maintained.

Under the reciprocity treaty the duties on flour are to be reduced to $1 per hundred kilogrammes after January 1, 1892. As a hundred kilogrammes are equivalent to 225 pounds, and a standard barrel is 196 pounds, the duties will be about ninety cents per barrel. This reduction will give our exporters absolute control over the market. If $4.50 did not keep out American flour, ninety cents will be merely a revenue duty imposed on a largely increased importation into the islands.

Wheat, which has been taxed $3.51 per 100 kilogrammes, is reduced to thirty cents; rye, buckwheat and their flours are free, a tax of $3.51 having been removed; corn is cut down from $1.21 to thirty cents, and cornmeal from $1.21 to twenty-five cents. Starch, which has been subject to a duty of $5.84, is on the free list, offering in Cuba as well as in Brazil a great market for our manufacturers.

The general effect of these sweeping reductions will be to transfer the breadstuff trade of the islands from Spain to the United States. The new schedules and free lists will go into effect on September 1, 1891, with a postponement of three months in the case of flour. The treaty with Santo Domingo provides a free market for corn, cornmeal, starch, oats, barley, rye and buckwheat and flour of all cereals except wheat. The omission of wheat flour is a serious drawback but, as American trade with Santa Domingo is not large, this is not of material consequence.

The gains for American farmers from the reciprocity treaties are substantial so far as breadstuffs are concerned. Their prospective advantages are even larger. Countries in the South which produce coffee and sugar will be menaced after January 1, 1892, with the loss of their free market. The President, for example, by imposing a duty of three cents a pound can create a discrimination against Venezuela's coffee, amounting on the basis of recent importations to $1,722,614 a year. As that would be fatal to its trade, it will probably enter into reciprocity engagements and reduce the taxes on flour now exceeding 100 per cent.

In the same way the British West Indies, Central America and other countries will be brought under pressure to lower the duties on American breadstuffs. To cheapen the imported food supplies of tropical America is to increase largely the consumption.

Personal, Commercial, and Agricultural.

The Farmer on Top.—In the *North American Review* for July, Erastus Wiman indorses all the sanguine hopes for the immediate future of American agriculture expressed by C. Wood Davis in the AMERICAN AGRICULTURIST for May and July last. Mr. Wiman has evidently got the basis for his remarks from Mr. Wood's statistics, and holds that the rapid growth in the last few years of the food-consuming population and the exhaustion of arable soils has caught up with production. He believes that the limit of the wheat acreage in the United States has been practically reached, and cites the steady Northern trend of the wheat area. With the advent of prosperous times Mr. Wiman thinks the farmer "will abandon the absurd theories under which, in the days of his depression, some of his representatives sought relief by legislation; and it will not be surprising if he reaches the conclusion that the least interference with trade, the least taxation, and the least legislation will be the popular movement setting in as a reactionary sentiment from that which has hitherto prevailed." James W. Taylor points out in the New York *Sun* that Mr. Wiman has not considered the vast possibilities of the Canadian Northwest as a wheat-growing district. Over one million acres, he thinks, is available for wheat culture in Manitoba, Assiniboia, Saskatchewan, McKenzie, Atabasca, Alberta, British Columbia, and Southern Alaska. Although in such high latitudes, Mr. Taylor believes that these lands are suitable for wheat, because of the decrease in their elevation, which is equivalent to thirteen degrees of latitude climatically considered. Other influences are the Pacific winds facilitated by the interlocking valleys of the Columbia and Missouri rivers; the summer moisture, which renders irrigation unnecessary north of latitude fifty; the length of the summer day; and the maximum of fructification due to vigorous winters, cool, moist springs, and dry summers.

The Rothamsted Lectures.—When Sir J. B. Lawes of the private experimental farm and laboratory at Rothamsted, Eng., put his experimental department into the hands of trustees to be conducted permanently he provided for a system of lectures in America on the work at Rothamsted. These are to be given annually, the first six forming the main feature of the summer meeting of the Association of American Agricultural Colleges and Experiment Stations at Washington, August 12-17 inclusive. The lectures were given by Dr. R. Warington, Fellow of Royal Society and Vice-President of the Chemical Society, who is Dr. Gilbert's chief assistant chemist at Rothamsted, and will doubtless be the latter's successor. The lectures are all illustrated with lantern pictures or diagrams. The subjects are (1) the Rothamsted agricultural station, (2) the circumstances which determine the rise and fall of nitrogenous matter in the soil, (3) nitrification, (4) nitrification and denitrification, (5) nitrification of soils and manures, (6) drainage and well waters. Dr. Lawes should understand that these lectures are thoroughly appreciated. They will be published in full in the report of the association, to be printed by the United States Department of Agriculture, and should be in the library of every agricultural student and progressive farmer.

The Rice Market opens with a boom. The prospect for this cereal was never better, as may be inferred from the elaborate article on rice culture in the present and the August number of the AMERICAN AGRICULTURIST. The new crop sold in New Orleans on Aug. 1, at $6.00 per barrel of 162 pounds, and the crop will make ten to twenty barrels per acre.

The Society for the Promotion of Agricultural Science announces its annual meeting at Washington, August 17-18. This body is composed of some of the leading experimenters of the country, and its discussions are confined to the more scientific aspects of their work. The topics, include such matters as the physiological basis for the comparison of potato production, description of varieties of strawberries and raspberries, potato rot, bacterial diseases of the chinch bug, soaking seed beans to check fungous diseases, soil extract in relation to the development of tubercles on clover roots, residues left in the centrifuge, the increasing usefulness of the kerosene emulsion, loss and gain of plant food in the soil, fungicides for the apple scab, olive oil adulterations, the Babcock milk tester versus the churn test, etc.

A Reliable Truss.—The best remedy for a rupture is a good truss, and those suffering from this affliction cannot be too careful in their selection. To serve its purpose properly, the truss should have perfect adjustment so that the pad can be regulated by the patient to suit his case. It should be fitted so that it cannot be displaced by exercise or change of position, and above all it should be perfectly comfortable to the wearer when engaged in hard labor. Such a one is the Axion Elastic Truss, manufactured by the G. V. House Mfg. Co., New York City, whose advertisement appears in another page of this number.

Agricultural Experimenters.—The agricultural section of the Association of American Agricultural Colleges and Experiment Stations discussed some very practical questions at the meeting of the society in Washington last month. Among the subjects considered were: How fiber plants may be studied to best advantage, C. D. Smith, of Minnesota; how many cattle should be used in a feeding experiment, F. A. Gulley, of Arizona; physical conditions surrounding animals in experimental feeding, especially as related to stalls and mangers, W. A. Henry, of Wisconsin; model coöperative plat work, W. P. Brooks, of Massachusetts; how the results of work can be most successfully presented to the farmer, I. P. Roberts, of New York; experimental work of importance to coast-

(*Continued on Page* 532).

Pointers and Information.—I have been very successful in gardening and poultry-raising, and have received all my pointers and information through the AMERICAN AGRICULTURIST.

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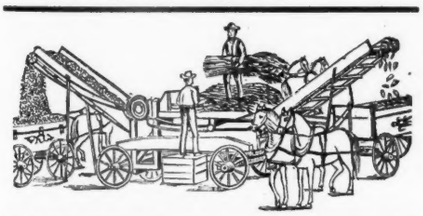

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State, County and Other Fairs in 1891.

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STATE AND PROVINCIAL FAIRS.

Alabama	Birmingham	Oct. 20-Nov. 30
"Southern Exposition"	Montgomery	Oct. 28-Nov. 11
American Institute	New York	Sept. 30-Nov. 28
California	Sacramento	Sept. 17-19
Canada	Toronto	Sept. 7-19
Colorado	Pueblo	Sept. 24-30
Connecticut	Meriden	Sept. 16-19
Delaware	Dover	Sept. 22-25
Georgia	Macon	Oct. 21-29
Illinois	Peoria	Sept. 28-Oct. 2
Indiana	Indianapolis	Sept. 21-26
Iowa	Des Moines	Aug. 28-Sept. 4
Kansas	Topeka	Sept. 11-19
Kentucky		
Louisiana	Baton Rouge	Oct. 6-10
Maine		
Michigan	Detroit	Aug. 25-Sept. 4
Michigan	Lansing	Sept. 7-11
Minnesota	Hamline	Sept. 9-13
Minnesota	St. Paul	Sept. 7-12
Missouri	Sedalia	Aug. 18-Sept. 22
Montana	Helena	Aug. 22-29
Nebraska	Lincoln	Sept. 4-11
New Jersey	Newark, "Waverley Park"	Sept. 21-25
New Jersey "Interstate"	Trenton	Sept. 28-Oct. 2
New Mexico	Albuquerque	Sept. 21-26
Nevada	Reno	Sept. 21-26
New York	Syracuse	Sept. 10-17
North Carolina	Raleigh	Oct. 1-Dec. 1
Ohio	Columbus	Sept. 14-18
Ohio "Interstate"	Toledo	Sept. 7-12
Rhode Island	Narragansett Park	Sept. 22-26
South Carolina	Columbia	Nov. 9-13
South Dakota	Sioux Falls	Sept. 21-25
Tennessee "Interstate"	Memphis	Oct. 13-17
Texas	San Antonio	Nov. 10-22
Texas	Dallas	Oct. 17-Nov. 1
Utah	Salt Lake City	Oct. 6-10
Washington	Walla Walla	Sept. 28-Oct. 3
Wisconsin	Milwaukee	Sept. 14-18

ALABAMA.

Butler	Greenville	Oct. 20-23
Lee	Opelika	Nov. 16-21
Madison	Huntsville	Oct. 6-9

ARKANSAS.

Benton	Rogers	Oct. 13-16
Boone	Harrison	Oct. 7-10
Bradley	Warren	Oct. 7-9
Independence	Batesville	Oct. 10-16
Phillips	Helena	Oct. 20-24
Sebastian	Fort Smith	Oct. 14-18
St. Francis	Forrest City	Oct. 13-18

ARKANSAS DISTRICT.

Hempstead	Hope	Oct. 20-24
Ouachita	Camden	Oct. 20-24

CALIFORNIA.

Fresno	Fresno City	Sept. 29-Oct. 3
Inyo	Bishop	Sept. 29 Oct. 2
Napa	Napa City	Aug. 17-22
Plumas	Quincy	Sept. 21-26
San Luis Obispo	San Luis Obispo	Sept. 22-26
Santa Barbara	Santa Barbara	Sept. 1-4
Stanislaus	Modesto	Oct. 14-17
Tehama	Red Bluff	Aug. 18-22

CALIFORNIA DISTRICT.

Nevada	Glenbrook Park	Sept. 1-5
San Benito	Hollister	Oct. 6-10
San Joaquin	Stockton	Sept. 22-Oct. 3
Santa Barbara	Santa Barbara	Aug. 18-21
Santa Clara	San Jose	Aug. 10-15
Santa Cruz	Santa Cruz	Sept. 30-Oct. 3
Siskiyou	Yreka	Sept. 29-Oct. 2
Tulare	Visalia	Oct. 5-10

COLORADO.

Gunnison	Gunnison	Sept. 22-25
Larimer	Fort Collins	Sept. 22-25

COLORADO DISTRICT.

Montrose	Montrose	Sept. 30-Oct. 3

CONNECTICUT.

Fairfield	Danbury	Oct. 8-10
Fairfield	Huntington	Sept. 23-24
Litchfield	Watertown	Sept. 22-24
Litchfield	New Milford	Sept. 9-11
New Haven	Guilford	Sept. 30
New Haven	Meriden	Sept. 15-18
New Haven	Wolcott	Oct. 14
New London	Norwich	Sept. 22-24
Tolland	Rockville	Sept. 8-10
Tolland	Stafford Springs	Oct. 7-8
Windham	Willimantic	Sept. 29-Oct. 1
Windham	Brooklyn	Sept. 15-17

GEORGIA.

Calhoun	Morgan	Nov. 11-14
Clayton	Jonesboro	Sept. 1-5
Fulton	Atlanta	Oct. 19 Nov. 7
Hall	Gainesville	Nov. 10-13
Hancock	Sparta	Oct. 21-27
Jefferson	Louisville	Oct. 28-30
Morgan	Madison	Oct. 29-30
Savannah Exposition	Augusta	Nov. 2-28
Warren	Warrenton	Oct. 14-18

ILLINOIS.

Adams	Camp Point	Aug. 24-28
Alexander	Cairo	Sept. 1-5
Boone	Belvidere	Sept. 18-1
Brown	Mt. Sterling	Aug. 17-21
Bureau	Princeton	Sept. 8-11
Carroll	Mt. Carroll	Sept. 15-18
Cass	Virginia	Aug. 3-8
Champaign	Champaign	Aug. 25-29
Christian	Pana	Aug. 25 29
Christian	Assumption	Aug. 31-Sept. 4
Coles	Charleston	Sept. 8-12
Crawford	Robinson	Sept. 22-25
DeKalb	Sandwich	Sept. 15-18
DeWitt	Farmer City	Sept. 1-4
DeWitt	Clinton	Aug. 10-14
Douglas	Camargo	Sept. 15-18
Du Page	Wheaton	Sept. 8-10
Edgar	Paris	Aug. 31-Sept. 4
Effingham	Watson	Sept. 22-25
Edwards	Albion	Sept. 29-Oct. 2
Fayette	Vandalia	Oct. 13-16
Ford	Piper City	Sept. 15-18
Franklin	Benton	Sept. 15-18
Fulton	Canton	Sept. 22-25
Gallatin	Shawneetown	Aug. 25-29
Hamilton	McLeansboro	Sept. 8-11
Hancock	Carthage	Sept. 7-11
Hardin	Elizabethtown	Aug. 11 14
Henry	Cambridge	Aug. 31-Sept. 4
Henry	Kewanee	Sept. 14-18
Iroquois	Watseka	Aug. 11-14
Iroquois	Milford	Aug. 18-21
Jasper	Newton	Sept. 15-18
Jersey	Jerseyville	Oct. 13-16
Jo Daviess	Galena	Sept. 29 Oct. 2
Johnson	Vienna	Sept. 15-18
Kankakee	Kankakee	Sept. 8-11
Kendall	Yorkville	Sept. 1-4
Knox	Knoxville	Sept. 7-11
Lake	Libertyville	Sept. 22-25
LaSalle	Mendota	Sept. 1-4
Livingston	Fairbury	Sept. 7-11
Logan	Atlanta	Sept. 1-4
Macoupin	Carlinville	Sept. 1-4
Marshall	Wenona	Sept. 21-25
Massac	Metropolis	Sept. 9-12
McLean	Bloomington	Aug. 25-28
McLean	Saybrook	Sept. 15-18
McDonough	Macomb	Aug. 24-28
McHenry	Woodstock	Aug. 25-28
Menard	Petersburg	Sept. 1-4
Mercer	Aledo	Sept. 22-25
Montgomery	Hillsboro	Sept. 1-4
Morgan	Jacksonville	Sept. 1 4
Moultrie	Sullivan	Sept. 1-5
Ogle	Oregon	Sept. 22-25
Ogle	Rochelle	Sept. 8-11
Peoria	Dunlap	Sept. 16-18
Perry	Pinckneyville	Oct. 6-9
Pike	Griggsville	Aug. 10-14
Randolph	Chester	Oct. 13-16
Richland	Olney	Oct. 20-23
Saline	Harrisburg	Aug. 4-7
Saline	Eldorado	Aug. 11-15
Sangamon	Springfield	Sept. 7-11
Schuyler	Rushville	Aug. 10-14
Shelby	Shelbyville	Sept. 15-19
Stark	Toulon	Sept. 7-11
Tazewell	Mackinaw	Aug. 31-Sept. 4
Tazewell	Delavan	Aug. 25-28
Union	Jonesboro	Sept. 15-18
Union	Anna	Aug. 25-28
Vermillion	Catlin	Sept. 8-11
Vermillion	Danville	Sept. 1
Wabash	Mt. Carmel	Sept. 15-18
Warren	Monmouth	Sept. 8-11
White	Carmi	Sept. 1-5
Williamson	Marion	Sept. 24-27
Whiteside	Morrison	Sept. 1-4
Winnebago	Rockford	Sept. 1-4

ILLINOIS DISTRICT.

Alexander	Cairo	Sept. 1-5
Fulton	Avon	Sept. 15-18
Hancock	La Harpe	Aug. 31 Sept. 4
Jackson	Maquoketa	Sept 8-11
Macon	Macon	Aug. 18-21
McDonough	Bushnell	Aug. 18-21
Pike	Barry	Aug. 4-7
Piatt	Monticello	Aug. 17-21
Shelby	Moweaqua	Sept. 8-11
Stark	Wyoming	Sept. 1-4
St. Clair	Belleville	Sept. 1-5
Stephenson	Freeport	Sept. 8-11
Vermillion	Hoopeston	Aug. 24-28

INDIANA.

Benton	Boswell	Sept. 7-12
Boone	Lebanon	Aug. 17-21
Carroll	Camden	Sept. 1-4
Clarke	Charlestown	Aug. 31-Sept 4
Clinton	Frankfort	Aug 25 29
Crawford	Marengo	Aug. 31-Sept. 5
Daviess	Washington	Sept. 28-Oct. 3
Decatur	Greensburg	Aug. 25-28
Dearborn	Lawrenceburg	Aug. 18 22
DeKalb	Waterloo	Oct. 5-9
Delaware	Muncie	Aug. 19-18
DuBois	Huntingburg	Sept. 14-21
Elkhart	Goshen	Sept. 21-25
Floyd	New Albany	Sept. 14-18
Fountain	Covington	Sept. 14-18
Fulton	Rochester	Sept. 2-5
Grant	Marion	Aug. 25-28
Gibson	Princeton	Sept. 7-12
Greene	Bloomfield	Sept. 15-20
Hancock	Greenfield	Aug. 18-21
Hamilton	Sheridan	Aug. 31-Sept. 4
Harrison	Corydon	Aug. 25-28
Henry	New Castle	Aug. 11 14
Henry	Middleton	Aug. 4-7
Howard	Poplar Grove	Sept. 28-Oct. 2
Huntington	Warren	Sept. 1-5
Huntington	Huntington	Sept. 8-17
Jay	Portland	Sept. 29-Oct. 2
Jefferson	Madison	Aug. 11-14
Jennings	North Vernon	Aug. 4 7
Johnson	Franklin	Sept. 15-19
Knox	Vincennes	Oct. 12-17
LaPorte	LaPorte	Sept. 29-Oct. 2
Lawrence	Bedford	Oct. 6-10
Lake	Crown Point	Sept. 29-Oct. 2
Lawrenceburg	Lawrenceburg	Aug. 18-22
Marshall	Bremen	Sept. 29-Oct. 2
Marshall	"Culver Park" Lake Maxinkuckee	Sept. 22-25
Miami	Peru	Sept. 15-18
Monroe	Bloomington	Sept. 14-18
Montgomery	Crawfordsville	Sept. 7-11
Newton	Morocco	Sept. 15-18
Noble	Ligonier	Oct. 5-9
Orange	Paoli	Sept. 9-12
Owen	Spencer	Aug. 17-22
Parke	Rockville	Aug. 17-21
Parke	Bridgeton	Aug. 10 15
Posey	New Harmony	Sept. 14-18
Posey	Mt. Vernon	Sept. 22-26
Porter	Valparaiso	Sept. 22-25
Pike	Petersburg	Aug. 31-Sept. 4
Pulaski	Winamac	Sept. 15-18
Pulaski	Francesville	Sept. 8-11
Putnam	Bainbridge	Aug. 31-Sept. 4
Randolph	Winchester	Sept. 8-11
Rush	Rushville	Sept. 8 12
Scott	Scottsburg	Sept. 8-11
St. Joseph	Mishawaka	Sept. 14-18
Shelby	Shelbyville	Sept. 1 5
Spencer	Rockport	Sept. 21-26
Steuben	Angola	Sept. 22-25
Switzerland	East Enterprise	Sept. 1-4
Tippecanoe	LaFayette	Aug. 31-Sept. 4
Tipton	Tipton	Aug. 17-21
Vanderburg	Evansville	Sept. 28-Oct. 3
Vermillion	Newport	Sept. 28-Oct. 2
Vermillion	Cayuga	Aug. 17-20
Vigo	Terre Haute	Aug. 24-28
Wabash	Wabash City	Sept. 22 26
Wabash	No. Manchester	Sept. 29 Oct. 2
Warrick	Boonville	Oct. 5-10
Washington	Pekin	Sept. 8-12
Washington	Salem	Sept. 1-4
Wayne	Richmond	Aug. 25-28
Wayne	Dalton	Sept. 8-11
Wayne	Hagerstown	Aug. 18-22

INDIANA DISTRICT.

DeKalb	Auburn	Sept. 7-11
Fountain	Covington	Sept. 14-18
Kosciusko	Warsaw	Sept. 14-18
Knightstown	Knightstown	Aug. 25 29
Martin	Loogootee	Oct. 6-10
Posey	Mt. Vernon	Sept. 21-25

IOWA.

Adams	Corning	Sept. 21-25
Audubon	Audubon	Sept. 14-17
Buchanan	Independence	Sept. 30-Oct. 3
Calhoun	Rockwell City	Sept. 15-18
Carroll	Carroll	Sept. 21-24
Cass	Atlanta	Sept. 7-10
Cedar	Tipton	Sept. 1-5
Chickasaw	New Hampton	Sept. 2-4
Clarke	Osceola	Sept. 8-11
Clayton	National	Sept. 8-11
Crawford	Denison	Sept. 17 19
Dallas	Adell	Aug. 25-28
Davis	Bloomfield	Aug. 25-28
Delaware	Manchester	Sept. 8-11
Fayette	West Union	Sept. 1-4
Floyd	Charles City	Sept. 10 12
Greene	Jefferson	Aug. 18-21
Grundy	Grundy Center	Sept. 15-17
Hardin	Eldora	Sept. 8-11
Howard	Cresco	Sept. 1-4
Ida	Ida Grove	Sept. 15-17
Jasper	Newton	Sept. 15-18
Jones	Anamosa	Aug. 25-28
Kossuth	Algona	Sept. 23 25
Linn	Central City	Sept. 15-18
Louisa	Wapello	Aug. 25-28
Lyon	Rock Rapids	Sept. 15-17
Madison	Winterset	Sept. 28-Oct. 1
Marion	Knoxville	Aug. 18-21
Mitchell	Osage	Sept. 9 11
Montgomery	Red Oak	Sept. 14-18
Muscatine	Muscatine	Sept. 15-18
Osceola	Sibley	Sept. 11-12
Page	Clarinda	Aug. 31-Sept. 4
Palo Alto	Emmettsburg	Sept. 16-18
Pocahontas	Fonda	Sept. 15 18
Ringgold	Mount Ayr	Sept. 15 18
Sac	Sac City	Sept. 9-11
Scott	Davenport	Sept. 7 11
Shelby	Harlan	Aug. 25-28
Tama	Toledo	Sept. 29 Oct. 1
Taylor	Bedford	Sept. 8-11
Union	Afton	Sept. 15-18
Van Buren	Keosauqua	Sept. 15-18
Wayne	Corydon	Sept. 21-25
Wapello	Ottumwa	Aug. 18-21
Warren	Indianola	Sept. 15-18
Washington	Washington	Sept. 15-18
Winnebago	Forest City	Sept. 8 12
Winneshiek	Decorah	Sept. 8-10
Worth	Northwood	Sept. 15-17
Wright	Clarion	Sept. 15-18

IOWA DISTRICT.

Cedar	Mechanicsville	Sept. 8-11
Jones	Anamosa	Aug. 25-28
Shelby	Shelby	Sept. 29-Oct. 2
Van Buren	Milton	Sept. 8-11
Wapello	Agency	Sept. 29-Oct. 2

KANSAS.

Anderson	Garnett	Aug. 26 29
Barber	Kiowa	Sept. 9-11
Brown	Hiawatha	Sept. 1-4
Chase	Cottonwood Falls	Aug. 19 21
Cherokee	Columbus	Oct. 6-9
Cheyenne	St. Francis	Sept. 24-26
Coffey	Burlington	Sept. 21-26
Cowley	Winfield	Sept. 1-4
Crawford	Girard	Sept. 1-4
Franklin	Ottawa	Sept. 28-Oct 2
Graham	Hill City	Sept. 24-26
Grant	Ulysses	Oct. 7-8
Jefferson	Oskaloosa	Sept. 8-10
Johnson	Edgerton	Sept. 22-26
Linn	Mound City	Sept. 15 19
Marion	Peabody	Aug. 26-28
Miami	Paola	Sept. 29-Oct. 3
Montgomery	Independence	Sept. 8-11
Morris	Council Grove	Sept. 15-18
Nemaha	Seneca	Sept. 22-25
Neosho	Erie	Oct. 6 9
Osage	Burlingame	Sept. 22-25
Phillips	Phillipsburg	Sept. 22 25
Pottawatomie	Wamego	Sept. 29-Oct. 2
Rawlins	Atwood	Oct. 7-9
Rush	LaCrosse	Sept. 24-26
Saline	Salina	Sept. 8-11
Sumner	Wellington	Aug. 25-28
Wilson	Fredonia	Sept. 2-4

KENTUCKY.

Adair	Columbia	Aug. 4-7
Anderson	Lawrenceburg	Aug. 18-21
Bath	Sharpsburg	Aug. 11-14
Bourbon	Paris	Sept. 1-5
Boyle	Danville	Aug. 4-7
Caldwell	Princeton	Oct. 7-10
Campbell	Alexandria	Sept. 1-5
Christian	Hopkinsville	Oct 22-24
Clark	Winchester	Sept. 8-12
Daviess	Owensboro	Oct. 6-10
Fayette	Lexington	Aug. 28-29
Hardin	Elizabethtown	Sept. 8-11
Harr	Horse Cave	Sept. 15-18
Henderson	Henderson	Sept. 8-12
Hopkins	Madisonville	Aug. 12-15
Jefferson	Fern Creek	Aug. 18-20
Jessamine	Nicholasville	Aug. 11-14
Laurel	London	Aug. 26-28
Leslie	Hyden	Aug. 22
Mason	Maysville	Aug. 18 22
Mason	Germantown	Sept. 30
McCracken	Paducah	Oct 14-16
Mercer	Harrodsburg	July 28-31
Muhlenberg	Greenville	Oct. 14-17
Nelson	Bardstown	Sept. 1-5
Ohio	Hartford	Sept. 30-Oct. 3
Oldham	La Grange	Sept. 2
Owen	Owenton	Sept. 29-Oct. 3
Pulaski	Somerset	Sept. 8-11
Shelby	Shelbyville	Aug. 25-28
Taylor	Campbellsville	Aug. 11 14
Union	Uniontown	Aug. 18-22

LOUISIANA.

Caddo	Shreveport	Nov. 3 7
East Feliciana	Clinton	Oct. 27-30

MAINE.

Aroostook	"Maple Grove Park" Houlton	Sept. 30
Franklin	Farmington	Sept. 29 Oct. 1
Oxford	South Paris	Sept. 15-17
Penobscot	"Maplewood Park" Bangor	Sept. 1-4
Sagadahoc	Topsham	Oct. 13-15
Somerset	Skowhegan	Sept. 15-17
York	Saco	Aug. 25-28

MARYLAND.

Baltimore	Timonium	Sept. 8-11
Frederick	Frederick City	Oct. 13-16
Harford	Belair	Oct. 13-16
Montgomery	Rockville	Sept. 2-4
Talbot	Easton	Sept. 1-4
Washington	Hagerstown	Oct. 13-16

MASSACHUSETTS.

Barnstable	Barnstable	Sept. 15-16
Berkshire	Pittsfield	Sept. 15-18
Berkshire	Great Barrington	Sept. 30-Oct. 2
Bristol	Taunton	Oct. 7-10
Dukes	West Tisbury	Oct. 6-8
Essex	Lawrence	Sept. 16-17
Franklin	Charlemont	Sept. 17-18
Franklin	Greenfield	Sept. 24-25
Hampden	Palmer	Sept. 22-23
Hampshire	Northampton	Oct. 7-9
Middlesex	Framingham	Sept. 8-10
Middlesex North	Lowell	Sept. 22-24
Nantucket	Nantucket	Sept. 2-3
Plymouth	Hingham	Sept. 29-30
Plymouth	Bridgewater	Sept. 23-25
Worcester	Worcester	Sept. 1-4
Worcester	Fitchburg	Sept. 22-23
Worcester	Athol	Oct. 6-7
Worcester	Barre	Sept. 24-25
Worcester	Oxford	Sept. 22-23
Worcester	Sturbridge	Sept. 17-18

MASSACHUSETTS DISTRICT.

Berkshire	No. Adams	Sept. 22-24

MICHIGAN.

Allegan	Allegan	Sept. 29-Oct. 2
Antrim	Bellaire	Sept. 29 Oct. 1
Barry	Hastings	Sept. 22-25
Branch	Coldwater	Sept. 21-25
Calhoun	Marshall	Sept. 29-Oct. 2
Cass	Dowagiac	Sept. 29-Oct. 2
Charlevoix	East Jordan	Sept. 30-Oct. 2
Eaton	Charlotte	Sept. 29-Oct. 2
Genesee	Flint	Sept. 15-18
Grand Traverse	Traverse City	Sept. 8-11
Hillsdale	Hillsdale	Sept. 28-Oct. 2
Hillsdale	Litchfield	Oct. 6-9
Ingham	Stockbridge	Oct. 6-8
Isabella	Mt. Pleasant	Sept. 22-25
Kalamazoo	Kalamazoo	Sept. 29-Oct. 2
Kent	Grand Rapids	Sept. 14-18
Kent	Cedar Springs	Sept. 8-11
Lapeer	Hadley	Oct. 6-8
Lenawee	Adrian	Sept. 21-25
Lenawee	Morenci	Sept. 16-18

Livingston	Howell	Sept. 22-25
Mecosta	Big Rapids	Sept. 30 Oct. 2
Menominee	Menominee	Sept. 7-11
Midland	Midland	Sept. 15-18
Monroe	Petersburg	Sept. 15-17
Oakland	Pontiac	Sept. 29 Oct. 2
Oceana	Hart	Sept. 22-25
Otsego	Gaylord	Sept. 28-29
St. Clair	Port Huron	Sept. 22-25
St. Joseph	Centreville	Oct. 6-9
Washtenau	Ann Arbor	Sept. 29-Oct. 2
Wayne	Plymouth	Sept. 22-25

MICHIGAN DISTRICT.

Ionia	Ionia	Sept. 22-25
Lapeer	Lapeer	Sept. 22-25
Macomb	Armada	Sept. 30-Oct. 2
Tuscola	Caro	Sept. 30 Oct. 3
Wexford	Cadillac	Sept. 17-18

MINNESOTA.

Anoka	Anoka	Sept. 3-5
Cottonwood	Windom	Sept. 16-18
Douglas	Alexandria	Sept. 29-Oct. 2
Faribault	Blue Earth City	Sept. 17 19
Fillmore	Preston	Sept. 14-17
Freeborn	Albert Lea	Sept. 15-18
Houston	Caledonia	Sept. 22-26
Jackson	Jackson	Sept. 16 17
Martin	Fairmount	Sept. 21-23
Meeker	Litchfield	Sept. 22-24
Mower	Austin	Sept. 14-18
Murray	Currie	Sept. 17-18
Nicollet	St. Peter	Sept. 17-19
Nobles	Worthington	Sept. 22-24
Olmsted	Rochester	Aug. 31-Sept. 5
Pope	Glenwood	Sept. 24-26
Ramsey	Hamline	Sept. 7-12
Redwood	Redwood Falls	Sept. 23-25
Sibley	Arlington	Sept. 1-5
Stearns	St. Cloud	Sept. 14-17
Steele	Owatonna	Sept. 17-19
Stevens	Morris	Sept. 17-19
Swift	Benson	Sept. 28-30
Todd	Long Prairie	Sept. 22-24
Wilkin	Breckenridge	Sept. 29-Oct. 2
Winona	Winona	Aug. 24-29

MISSOURI.

Adair	Kirksville	Sept. 7-11
Atchison	Rockport	Sept. 15 18
Audrain	Mexico	Aug. 3-8
Caldwell	Hamilton	Aug. 25-29
Callaway	Fulton	Aug. 11-15
Carroll	Carrollton	Sept. 8-12
Cass	Belton	Aug. 18-22
Clark	Kaboka	Aug. 25-28
Dade	Lockwood	Sept. 15-18
Gasconade	Hermann	Sept. 4-5
Gentry	Albany	Sept. 1-4
Harrison	Ridgeway	Sept. 8-11
Jackson	Kansas City	Oct. 3-11
Jasper	Carthage	Sept. 15-18
Johnson	Holden	Aug. 25-28
LaFayette	Higginsville	Aug. 18
Lincoln	Troy	Sept. 8-11
Livingston	Chillicothe	Sept. 28-Oct. 2
Marion	Palmyra	Sept. 29-Oct. 3
Monlteau	California	Sept. 22-25
Monroe	Paris	Aug. 18-23
Pike	Louisiana	July 27 31
Platte	Platte City	Aug. 25 29
Polk	Bolivar	Sept. 15-19
Putnam	Unionville	Aug. 26-29
St. Charles	St. Charles	Sept. 16 18
Scotland	Memphis	Sept. 1-4
Sullivan	Milan	Sept. 1-5

MISSOURI DISTRICT.

Barton	Lamar	Sept. 1-4
Cape Girardeau	Cape Girardeau	Oct. 13-17
Daviess	Jamesport	Sept. 1-4
Grundy	Trenton	Sept. 8-11
Macon	La Plata	Sept. 1 4
Randolph	Moberly	Aug. 11-15

MISSISSIPPI.

Grenada	Grenada	Oct. 28-30
Lauderdale	Meridian	Oct. 19-24
Noxubee	Macon	Oct. 13-16

NEBRASKA.

Adams	Hastings	Oct. 6 9
Antelope	Neligh	Sept. 23-25
Brown	Long Pine	Sept. 16-19
Buffalo	Kearney	Sept. 1-4
Burt	Tekamah	Sept. 29 Oct. 2
Butler	David City	Sept. 22-25
Cass	Plattsmouth	Sept. 15-18
Cheyenne	Sidney	Sept. 23 25
Clay	Clay Center	Sept 15-18
Colfax	Schuyler	Sept. 30-Oct. 2
Custer	Broken Bow	Sept. 22-25
Dawson	Lexington	Sept. 22-25
Dixon	Ponca	Sept. 23 25
Dodge	Fremont	Sept. 29-Oct. 2
Douglas	Omaha	Aug. 31-Sept. 4
Fillmore	Geneva	Sept. 15-18
Franklin	Franklin	Sept. 22-25
Frontier	Stockville	Sept. 23-25
Gage	Beatrice	Sept. 22-25
Hall	Grand Island	Sept. 1 4
Hamilton	Aurora	Sept. 15-18
Harlan	Orleans	Sept. 1-5
Hayes	Hayes Center	Oct. 1-3
Hitchcock	Culbertson	Sept. 22-25
Jasper	Elwood	Sept. 17-19
Jefferson	Fairbury	Sept. 15-18
Johnson	Tecumseh	Sept. 24-26
Kearney	Minden	Sept. 17-20
Keith	Ogalalla	Sept. 22-25
Lincoln	No. Platte	Sept. 15-18
Madison	Madison	Sept. 23-25
Merrick	Central City	Sept. 14-17
Nemaha	Auburn	Sept. 29-Oct. 2
Otoe	Syracuse	Sept. 16-18
Perkins	Madrid	Sept. 24-26
Platte	Columbus	Sept. 16-18
Polk	Osceola	Sept. 29 Oct. 2
Rock	Bassett	Sept. 30 Oct. 2
Saline	Wilber	Sept. 1-4
Sarpy	Papillion	Sept. 16-19
Saunders	Wahoo	Sept. 22-25
Seward	Seward	Sept. 29-Oct. 2
Stanton	Stanton	Sept. 14-17
Thayer	Hebron	Sept. 22-25
Valley	Ord	Sept. 15-18
Webster	Red Cloud	Oct. 5-9
York	York	Sept. 22-25

NEBRASKA DISTRICT.

Richardson	Falls City	Sept. 15-18

NEW HAMPSHIRE.

Cheshire	Keene	Sept. 9-10
Cheshire	Rindge	Sept. 30
Coos	Colebrook	Sept. 29-Oct. 1
Coos	Whitefield	Sept. 30-Oct. 1
Grafton	Canaan	Sept. 22-24
Merrimack	Warner	Sept. 23-24
Merrimack	New London	Sept. 22
Merrimack	Tilton	Sept. 15-17
Rockingham	Southampton	Sept. 30-Oct. 1
Strafford	Rochester	Sept. 22-25
Sullivan	Newport	Oct. 7

NEW JERSEY.

Atlantic	Egg Harbor City	Sept. 19-21
Burlington	Mt. Holly	Sept. 14 18
Cape May	Cape May, C. H.	Oct. 6-7
Cumberland	Bridgeton	Aug. 18 20
Somerset	Somerville	Sept. 15-17
Salem	Woodstown	Aug. 25-27

NEVADA.

Lander	Austin	Sept. 29-30
Washoe	Reno	Sept. 21-26

NEW YORK.

Albany	Albany	Aug. 26-Sept. 1
Allegany	Cuba	Sept. 22-25
Allegany	Angelica	Sept. 8-11
Broome	Windsor	Sept. 15-18
Broome	Whitney's Point	Sept. 1 4
Cattaraugus	Little Valley	Sept. 1-4
Clinton	Plattsburgh	Sept. 8-11
Columbia	Hudson	Sept. 1 4
Columbia	Chatham	Sept. 8-11
Chautauqua	Jamestown	Aug. 31-Sept. 3
Chemung	Elmira	Sept. 29-Oct. 2
Delaware	Delhi	Sept. 1-3
Dutchess	Poughkeepsie	Sept. 22-25
Essex	Westport	Sept. 1-4
Franklin	Malone	Sept. 22 24
Fulton	Johnstown	Sept. 7-10
Greene	Cairo	Aug. 26 28
Herkimer	Herkimer	Sept. 8-10
Lewis	Lowville	Sept. 15-18
Livingston	Geneseo	Sept. 30-Oct. 2
Monroe	Rochester	Sept. 21-25
Montgomery	Fonda	Aug. 31-Sept. 3
Niagara	Lockport	Sept. 17-19
Ontario	Canandaigua	Sept. 29-Oct. 1
Orleans	Albion	Sept. 24-26
Oswego	Oswego	Sept. 1-4
Otsego	Cooperstown	Sept. 21 23
Putnam	Carmel	Aug. 25-28
Queens	Mineola, L. I.	Sept. 22 26
Rockland	Spring Valley	Sept. 22-25
Rockland	New City	Sept. 8-11
St. Lawrence	Canton	Sept. 15 18
Saratoga	Ballston Spa	Sept. 8-11
Schoharie	Schoharie	Sept. 22-24
Schoharie	Cobleskill	Sept. 28-Oct. 1
Schuyler	Watkins	Sept. 30-Oct. 2
Seneca	Waterloo	Sept. 29 Oct. 1
Steuben	Bath	Sept. 29 Oct. 2
Steuben	Hornellsville	Aug. 24-28
Suffolk	Riverhead	Sept. 29-Oct. 1
Sullivan	Monticello	Sept. 8-10
Tioga	Owego	Sept. 8-10
Tompkins	Ithaca	Sept. 8-11
Washington	Cambridge	Aug. 31-Sept. 4
Washington	Fort Edward	Sept. 7-11
Wayne	Lyons	Sept. 30-Oct. 3
Westchester	White Plains	Sept. 28 Oct. 3
Wyoming	Warsaw	Sept. 29-30
Yates	Penn Yan	Sept. 22 25

NORTH CAROLINA.

Bladen	Elizabethtown	Oct. 18-21
Rowan	Salisbury	Oct. 20-23

OHIO.

Adams	West Union	Sept. 15-18
Allen	Lima	Sept. 15-18
Auglaize	Wapakoneta	Sept. 29-Oct. 2
Ashland	Ashland	Sept. 1-4
Ashtabula	Jefferson	Sept. 22-25
Athens	Athens	Sept. 22-24
Belmont	St. Clairsville	Sept. 29-Oct. 1
Butler	Hamilton	Oct. 5-9
Carroll	Carrollton	Sept. 22-25
Champaign	Urbana	Aug. 25-28
Clermont	Batavia	Aug. 31-Sept. 4
Clinton	Wilmington	Sept. 1-4
Clinton	Sabina	July 27-31
Columbiana	New Lisbon	Sept. 15-19
Coshocton	Coshocton	Oct. 6-7
Crawford	Bucyrus	Sept. 22-25
Darke	Greenville	Aug. 31-Sept. 4
Delaware	Delaware	Sept. 8-11
Erie	Sandusky	Sept. 15-18
Fairfield	Lancaster	Oct. 13-17
Fayette	Washington C. H.	Aug. 25-28
Fulton	Wauseon	Sept. 29-Oct. 2
Gallia	Gallipolis	Aug. 11-14
Greene	Xenia	Aug. 11-14
Guernsey	Washington	Sept. 29-Oct. 2
Hamilton	Carthage	Aug. 18-22
Hancock	Findlay	Oct. 7-10
Hardin	Kenton	Sept. 1-4
Harrison	Cadiz	Sept. 1 4
Henry	Napoleon	Sept. 8-11
Hocking	Logan	Sept. 9 12
Holmes	Millersburgh	Sept. 29-Oct. 2
Huron	Norwalk	Sept. 8 11
Jefferson	Smithfield	Sept. 23-25
Knox	Mt. Vernon	Sept. 8-11
Lake	Painesville	Aug. 25-29
Lawrence	Proctorville	Sept. 9-11
Licking	Hartford	Sept. 22-25
Licking	Newark	Sept. 29-Oct. 2
Logan	Bellefontaine	Sept. 29-Oct. 2
Lorain	Elyria	Sept. 29-Oct. 2
Madison	London	Sept. 8 11
Mahoning	Youngstown	Sept. 1-4
Marion	Marion	Sept. 29-Oct. 2
Medina	Medina	Sept. 1 3
Mercer	Celina	Aug. 25-28
Miami	Troy	Sept. 28-Oct. 2
Monroe	Woodsfield	Sept. 1-3
Montgomery	Dayton	Sept. 7-11
Morgan	McConnelsville	Sept. 14-17
Morrow	Mt. Gilead	Oct. 6-9
Muskingum	Zanesville	Sept. 1-4
Ottawa	Port Clinton	Sept. 23-25
Paulding	Paulding	Sept. 15-18
Perry	New Lexington	Aug. 26-28
Perry	Somerset	Oct. 21-24
Portage	Ravenna	Sept. 21-23
Preble	Eaton	Sept. 21-25
Putnam	Ottawa	Sept. 29-Oct. 3
Richland	Mansfield	Sept. 8-11
Ross	Chillicothe	Aug. 11-14
Sandusky	Tremont	Sept. 29-Oct. 2
Sandusky	Clyde	Sept. 1-4
Seneca	Tiffin	Sept. 29-Oct. 2
Seneca	Fostoria	Sept. 1-4
Shelley	Sidney	Sept. 22-25
Stark	Canton	Sept. 28-Oct. 2
Summit	Akron	Oct. 6-9
Trumbull	Warren	Sept. 8 11
Tuscarawas	Canal Dover	Sept. 22-25
Union	Marysville	Sept. 22-25
Van Wert	Van Wert	Sept. 8-11
Warren	Lebanon	Aug. 25-28
Washington	Marietta	Sept. 15-17
Wayne	Wooster	Sept. 22-25
Wayne	Burton	Sept. 15-18
Wood	Bowling Green	Sept. 29-Oct. 3
Wyandott	Upper Sandusky	Oct. 6-9

OHIO DISTRICT.

Clarke	Springfield	Sept. 1-4
Fulton	Wauseon	Sept. 22-25
Hardin	Ada	Aug. 18-21
Licking	Pataskala	Sept. 8-11
Scioto	Portsmouth	Aug. 4-7
Vinton	McArthur	July 28-31

OREGON.

Clackamas	Marquam	Sept. 23-27
Coos	Baudon	Sept. 10-
Harney	Harney City	Sept. 1
Marion	Salem	Sept. 14-19

PENNSYLVANIA.

Allegheny	Tarentum	Aug. 25-28
Armstrong	Daytou	Sept. 29 Oct. 2
Beaver	Beaver	Sept. 22-25
Beaver	Hookstown	Aug. 19-21
Bedford	Bedford	Sept. 22-25
Berks	Kutztown	Oct. 14-16
Berks	Reading	Sept. 15-18
Blair	Hollidaysburg	Sept. 22-25
Bradford	Towanda	Sept. 22-25
Bradford	Canton	Sept. 15-18
Bradford	Troy	Aug. 25 28
Bucks	Doylestown	Sept. 22-25
Butler	Butler	Sept. 8-11
Cambria	Carrolltown	Sept. 22-52
Cambria	Ebensburg	Sept. 29-Oct. 2
Carbon	Lehighton	Oct. 6-9
Center	Bellefonte	Sept. 14-19
Centre	Centre Hall	Sept 14-20
Chester	Oxford	Sept. 23-25
Chester	West Chester	Oct. 1-3
Clarion	Clarion	Sept. 15-18
Clearfield	DuBois	Sept. 1-3
Columbia	Bloomsburg	Oct. 14-17
Columbia	Berwick	Sept. 2-5
Columbia	Benton	Oct. 7-10
Cumberland	Carlisle	Sept. 29-Oct. 2
Crawford	Conneautville	Sept. 15-18
Crawford	Cochranton	Sept. 9-11
Crawford	Titusville	Sept. 1-4
Crawford	Cambridgeboro	Sept. 22-25
Dauphin	Gratz	Sept. 22-25
Erie	Corry	Sept. 15-18
Erie	Edinboro	Sept. 8-11
Erie	Watsburg	Sept. 1-4
Fayette	Uniontown	Aug. 26-29
Greene	Carmichaels	Oct. 7 8
Indiana	Indiana	Sept. 30-Oct. 3
Jefferson	Brookville	Sept. 22-25
Juniata	Port Royal	Sept. 22-25
Lackawanna	Scranton	Sept. 22-25
Lancaster	Lancaster	Sept. 9-12
Lawrence	New Castle	Aug. 25-28
Lehigh	Allentown	Sept. 28-Oct 2
Luzerne	Wyoming	Sept. 8-11
Luzerne	Dallas	Sept. 30-Oct. 3
Lycoming	Hughesville	Oct. 7-10
Mercer	Mercer	Sept. 15-17
Mercer	Stoneboro	Sept 29-Oct. 1
Monroe	Stroudsburg	Sept. 1-5
Montgomery	Pottstown	Oct. 6-9
Montour	Danville	Oct. 6-9
Montour	Washingtonville	Oct. 20-23
Northampton	Bethlehem	Sept. 21-26
Northampton	Nazareth	Oct. 6-9
Northumberland	Milton	Sept. 29-Oct. 2
Northumberland	Shamokin	Sept. 8 11
Perry	Newport	Sept. 15- 8
Potter	Coudersport	Sept. 16-18
Schuylkill	Orwigsburg	Sept. 1-4
Schuylkill	Ringtown	Aug. 26-28
Sullivan	Forksville	Sept. 30-Oct. 2
Susquehanna	Montrose	Sept. 29-30
Susquehanna	Harford	Sept. 23-24
Tioga	Mansfield	Sept. 22-25
Union	Lewisburg	Oct. 7-9
Warren	Warren	Sept. 8-11
Washington	Burgettstown	Oct. 6-8
Washington	Washington	Aug. 31-Sept. 4
Wayne	Honesdale	Sept. 29-Oct. 1
Westmoreland	Greensburgh	Oct. 6-9
Wyoming	Tunkhannock	Sept. 16-18
York	York	Oct. 5-10
York	Hanover	Sept. 15-18

RHODE ISLAND.

Washington	West Kingston	Sept. 14-17

SOUTH CAROLINA.

Chester	Chester	Oct. 26-31
Fairfield	Winnsboro	Nov. 3-4
Mason	Pt. Pleasant	Aug. 25-28

SOUTH DAKOTA.

Campbell	Mound City	Sept. 30-Oct. 1
Clay	Vermillion	Sept. 15 18
Deuel	Gary	Sept. 17-19
Turner	Parker	Sept. 30-Oct. 2
Union	Elk Point	Sept. 10-12

TENNESSEE.

Anderson	Clinton	Sept. 1-4
Bedford	Shelbyville	Sept. 3-5
DeKalb	Alexandria	Sept 24-26
Dyer	Dyersburg	Oct. 13-17
Fayette	Somerville	Oct. 6 19
Giles	Pulaski	Oct. 13-16
Gibson	Trenton	Oct. 13
Henry	Paris	Oct. 8-10
Lincoln	Fayetteville	Sept. 30-Oct. 3
Loudon	Loudon	Sept. 15-17
Madison	Jackson	Oct. 20-24
Marshall	Lewisburg	Sept. 22-25
Maury	Columbia	Sept. 15-19
Montgomery	Clarksville	Oct. 28-31
Overton	Livingston	Oct. 1-3
Polk	Cookstown	Oct. 7-10
Rutherford	Murfreesboro	Sept. 8-12
Smith	Dixon Springs	Aug. 26-29

TEXAS.

TEXAS DISTRICT.

Comanche	Comanche	Sent. 22-26
Fannin	Bonham	Sept. 22
Grayson	Harmon	Sept. 15-Oct. 1
McLennan	McGregor	Oct. 1-8
Tom Green	San Angelo	Oct. 5-40

UTAH.

Juab	Nephi	Oct. 17-20
Salt Lake County	Salt Lake City	Oct. 5-9

VERMONT.

Bennington	Manchester Center	Sept. 8-10
Caledonia	St. Johnsbury	Sept. 8-10
Franklin	Sheldon	Sept. 9 11
Rutland	Rutland	Sept. 15-18
Rutland	Fair Haven	Sept. 22-25
Washington	Waitsfield	Sept. 1-2
Windham	Brattleboro	Sept. 31-Oct. 1
Windsor	Woodstock	Sept. 22-24

VIRGINIA.

Brunswick	Lawrenceville	Oct. 14-16
Henrico	Richmond	Oct. 27-29
Northampton	Cape Charles City	Aug. 18-21
Shenandoah	Woodstock	Oct. 6-9
Spotsylvania	Fredericksburg	Sept. 29-Oct. 1
Tazewell	Tazewell	Sept. 29-Oct. 1.

VIRGINIA DISTRICT.

Augusta	Staunton	Oct. 1-3
Baldin	Staunton	Aug. 25-28
Frederick	Winchester	Sept. 8-11
Loudoun	Leesburg	Aug. 25-27

WASHINGTON.

King	Kent	Aug. 31-Sept. 5
Yakima	No. Yakima	Oct. 6 9

WEST VIRGINIA.

Greenbrier	Lewisburg	Sept. 1-4
Harrison	Clarksburg	Sept. 1-3
Jackson	Jackson C. H.	Sept. 14-17
Mason	Point Pleasant	Aug. 25-28
Ohio	Wheeling	Sept. 7-11
Ritchie	Pennsboro	Sept. 8-11
Tyler	Middlebourne	Aug. 25-27
Wetzel	New Martinsville	Sept. 1-4
Wood	Parkersburgh	Sept. 1-4

WISCONSIN.

Adams	Friendship	Sept. 22-24
Barron	Chetek	Sept. 8-11
Brown	Green Bay	Sept. 1-4
Burnett	Grantsburg	Sept. 25
Columbia	Portage City	Sept. 8-11
Dane	Madison	Sept. 8-11
Dodge	Beaver Dam	Sept. 29-Oct. 2
Door	Sturgeon Bay	Oct. 7 9
Fond du Lac	Fond du Lac	Sept. 8-11
Grant	Bloomington	Sept. 9-11
Iowa	Dodgeville	Aug. 26-28
Jackson	Black River Falls	Sept. 8-11
Jefferson	Jefferson	Sept. 29 Oct. 2
Juneau	Mauston	Sept. 8-10
La Crosse	La Crosse	Aug. 31-Sept. 5
LaFayette	Darlington	Sept. 8-11
Manitowoc	Manitowoc	Sept. 8 11
Marathon	Wausau	Sept. 15-18
Outagamie	Hortonville	Sept. 30-Oct. 2
Pepin	Durand	Sept. 9-11
Pierce	Ellsworth	Sept. 21-23
Portage	Amherst	Sept. 22-24
Racine	Racine	Sept. 1-4
Rock	Janesville	Sept. 8-11
St. Croix	Hudson	Sept. 1-3
Sheboygan	Sheboygan	Sept. 22-25
Trempealeau	Whitehall	Sept. 22-24
Vernon	Viroqua	Sept. 23-25
Walworth	Elkhorn	Sept. 22 25
Waukesha	Waukesha	Aug. 25-28
Waupaca	Weyauwega	Sept. 22-24
Winnebago	Oshkosh	Sept. 21-25

CANADA.

Addington	Newburgh	Oct. 8
Argenteuil	Lachute	Sept 23-24
Bruce	Walkerton	Sept. 29-Oct. 2
Carleton	Ottawa	Sept. 24-Oct. 3
Cornwall	Cornwall Center	Sept. 18-19
Dennis	Virden	Oct. 8-9
Dufferin	Manitou	Oct. 8-9
Dundas	Morrisburg	Sept. 15-16
Greenville	Prescott	Sept. 22-24
Haldimand	Cayuga	Sept. 29-30
Hastings	Belleville	Sept. 10-12
Huntingdou	Hemingford	Sept. 8
Joliette	Joliette	Sept 9-10
Kingston	Kingston, Ont.	Sept. 1-4
Missisquoi	Bedford	Sept. 1-2
Norfolk	Simcoe, Ont.	Oct. 13-14.
Ontario	Whitby	Sept. 22-24
Peterborough	Peterborough	Sept. 21-23
Peel	Brampton	Sept. 29 30
Perth	Stratford	Oct. 1-2
Peterborough	Norwood, Ont.	Oct. 13-14
Prince Edward	Picton	Sept. 8-9
Renfrew	Renfrew	Sept. 22-23
Richelieu	Sorel	Oct. 1-2
St. Johns	St Johns	Sept. 8-10
Shefford	Waterloo	Sept. 15-16
Stanstead	Ayers Flat	Sept. 9-10
Waterloo	"Berlin Park"	Waterloo Sept. 29 30

PRINCE EDWARD ISLAND.

Kings	Georgetown	Oct. 1
Prince	Summerside	Sept 25
Queens	Charlottetown	Oct. 9-6

Additional Fairs.

CALIFORNIA.		
Amador	Ione	Sept. 1-4
CALIFORNIA DISTRICT, NO. 2.		
San Joaquin	Stockton	Sept. 22-Oct. 3
COLORADO DISTRICT.		
Sedgwick	Julesburg	Oct. 7-9
CONNECTICUT.		
Hartford	Collinsville, Cherry Park,	Sept. 23-24
INDIANA.		
Noble	Kendallville	Sept. 28-Oct. 2
IOWA.		
Lucas	Charlton	Sept. 29-Oct. 2
KANSAS.		
Ellis	Hays City	Sept. 23-26
MASSACHUSETTS.		
Plymouth	Hanson	Sept. 18-19
MISSOURI.		
Greene	Springfield	Sept. 7 12
NEBRASKA.		
Keith	Ogallala	Sept. 30-Oct. 2
NEW MEXICO.		
Bernalillo	Las Vegas	Sept. 14-19
NEW YORK.		
Cayuga	Weedsport	Sept 22 25
Chenango	Greene	Sept. 8-11
Genesee	Batavia	Sept. 17-19
OHIO.		
Clark	Springfield	Aug. 31-Sept. 4
WISCONSIN.		
Calumet	Chilton	Sept. 29-Oct. 2
CANADA.		
Compton	Coaticook	Sept. 15 16
Lanark	Almonte	Sept. 2 -24

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MATTERS OF BUSINESS.

(*Continued from Page* 528).

line States as affected by maritime conditions, C. O. Flagg, of Rhode Island; soil features that should be recognized in all plat work, Milton Whitney, of Maryland; the relation of teaching to experimental work, G. E. Morrow, of Illinois, H. E. Alvord, of Maryland, and J. S. Newman, of Alabama; implement tests and use of the dynamometer, J. W. Sanborn, of Utah; what the duties of a station agriculturist should be, for open discussion; State soil surveys, how far they are practicable and how they should be conducted, E. W. Hilgard, of California, and M. W. Whitney, of Maryland; variety testing in cereals, and how it can be rendered more decisive, C. L. Ingersoll, of Nebraska, and J. F. Hickman, of Ohio.

The Boom in Cereals.—As we close up the last pages of this issue of the AMERICAN AGRICULTURIST the grain markets throughout the world are convulsed with excitement. Russia has prohibited the exportation of rye after September 1, and meanwhile her railways refuse to carry it to points of export. All cablegrams confirm the great shortage of wheat and rye in Russia and Germany, and the prices for these crops in both domestic and foreign markets advanced heavily. Rye was today (Aug. 18) worth more than wheat at New York and Berlin.

No More Slipping on the Ice.—The Blizzard Ice-Creeper for Horses, an illustration of which will be found in our advertising columns, will entirely take the place of blacksmith's sharpening, at a less cost and a great saving in time. They are clamped to any ordinary shoe on the horse's foot, and when put on properly will not come off. When the old calks are worn out any one can replace them with new at a cost of less than one cent each.

An English Duke's Opinion.—In his very interesting and instructive article on American railways published in the April number of the *Fortnightly Review*, the Duke of Marlborough places the New York Central at the head of the great railway corporations of the United States. Its central location through an almost continuous city from New York to Buffalo and Niagara Falls; its wonderful capacity for handling an immense traffic; its splendid passenger service, with eleven daily trains between New York and Buffalo and Niagara Falls, eight between New York and Chicago, three between New York and St. Louis, three between New York and Cincinnati, reaching by its own rails and through its connections every important commercial center in the country; its beautiful scenery, comprising as it does every variety of landscape; its entrance into the very heart of the metropolis of the country; these advantages, in connection with the number and variety of health and pleasure resorts which it reaches by its unequaled through-car service combine to impress the opinion upon all who investigate the subject, as the Duke of Marlborough did on his recent extended tour of the United States, that the New York Central is today "America's greatest railroad."—*Troy Budget.*

Reforming our Fiscal System.—One of the most sensible attempts to adapt the Farmers' Alliance demands for fiscal reform to the wants of the country is made by Governor Pennoyer of Oregon in the *North American Review* for August, in discussing "The New Political Party." He gives reasons that satisfy him that such a party is called for, and proceeds to advocate its leading demand in the extracts elsewhere printed. Some of the arguments against the fiscal measures of the Farmers' Alliance have previously been published in this magazine. We now print Governor Pennoyer's remarks, so as to give our readers an insight into both sides of this subject, which farmers are certainly making one of the issues of the day.

The Silver Question is being forced to the front more diligently than ever, especially by farmers. The two sides of the question were never more clearly and succinctly stated than in the articles republished in the present issue of the AMERICAN AGRICULTURIST (see Page 518). Mr. Frewen, who favors free coinage, is one of the most distinguished bimetalists of Europe, and discusses the subject in a forcible but conservative way, free from the heat and sophistry that so often obscures the arguments of its advocates in this country. Mr. Atkinson's reputation as an economist and "hard-money" man is well known. His suggestion of pounds-weight as a money standard is an old idea that is constantly cropping out, but he states it with singular effectiveness in the *Forum* for May last.

The Southern Fruit Evaporator.—The Eastern Mfg. Co., of Philadelphia, Pa., informs us that the Southern Fruit Evaporator, illustrated and described in our August number, is patented under the name of the Granger Fruit & Vegetable Evaporator by them and that any one engaging in the manufacture of the same will become liable for infringement of patent. In justice to our correspondent, Mr. L. D. Snook, we state that he informs us that he has seen the apparatus described by him in use in North Carolina, and if the necessary patent stamp was anywhere attached it escaped his notice, else he would not have thought of sending the sketch to us.

Pianos and Organs at Low Prices.—The success of Cornish & Co., at Washington, Warren Co., N. J., is something phenomenal. To any one who will visit their extensive factories it will soon become evident that the firm's motto of "Small Profits and Quick Returns" has largely contributed to their success. All kinds of pianos, square, grand, upright, etc., etc., are here manufactured in first-class style and in such large quantities that the cost in every detail becomes reduced to a minimum. The catalogues of this firm, which are sent free to all applicants, make interesting reading to every one interested in pianos and organs.

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The World's Fair and Other Things.—Everybody has read about the World's Fair, and nearly everybody has read the fine illustrated catalogue of the Foster Buggy & Cart Co., of Cincinnati, O., who are the manufacturers of the celebrated "Foster" $45.25 Buggies and $5.25 Harness Those who have not received a catalogue should send at once for it, as a few minutes cannot be spent to better advantage than in reading a catalogue of the "Foster" Buggies and Harness, and a postal card to their address will secure this valuable book free. The man or family must be in very moderate circumstances who cannot afford to ride when vehicles are sold at such nominal figures.

Will it Pay to Hold Wheat?—This is a vital question for farmers. It depends on other things than prospective prices, for cost of storage and loss by shrinkage add to the risk. Except for the British demand it is questionable whether wheat would be any longer a profitable crop except for home consumption. Only unexpected shortages abroad can restore old-time prices, and this for but a short period. Farmers, especially our Western settlers, should understand this and turn their attention to the mixed system of farming. It is evident that exceptional conditions now prevail, but these are at best only temporary, and while the prospects may warrant holding the present crop, now is a good time to warn against overproduction and low prices that must inevitably follow a season of good values.

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From "Field Notes" in the IOWA HOMESTEAD, August 6.

"In riding over the 1200 acres comprising the Woodside Stock Farm, at Oregon, Illinois, of which Mr. O. A. Fox is proprietor, the HOMESTEAD representative noticed a number of different kinds of fence inclosing the pasture containing the Shorthorns, Horses and Sheep. Nearly all the different kinds were seen including barb wire, rail and board. At one point was seen a section of Page Woven Wire Fence made at Adrian, Michigan. Referring to this fence Mr. Fox said he believed it to be the best in the world. He called attention to the fact that it required a very small number of posts but kept its position perfectly."

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For a long time past Gardeners of all classes, both professional and amateur, have experienced the want of a full reliable book of reference to which they could turn with confidence for an *accurate* description of any plant of horticultural value, and *practical* instruction in its cultivation.

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BY T. GREINER.

When our virgin soils were so well supplied with the necessary elements for plant food that the only thing for the farmer to do was to plant and till and reap the harvest, there was but little use for agricultural chemistry. With the changed conditions wrought by continuous, and generally reckless cultivation, the land does not respond any more quite so promptly as it has done before. Farming of the present day is changing more and more to a process of manufacturing crops out of the raw material largely supplied by men; the soil serving as a medium and implement of manufacture. The foremost and most formidable task which confronts us is that of finding and providing the raw material required for the production of our crops at prices that will leave us a fair profit. The chemist can ascertain the exact quantity of the various elements which constitute the plant or the grain or the fruit. He can also tell how much of each of these elements is contained in a cubic foot of soil, but the subtile ways and agencies of nature, the action of soil and life forces and forms in it baffle the skill of the chemist. It is here that experimentation has to step in and observe the results and try to ascertain the causes in his way. The farmer who avails himself of the results of the study and observation of the chemist as well as the experimenter is the man who has immeasurable advantages over those who go to work in a haphazard way. The great value of this volume consists in the manner in which the author has shown to the reader how easily he may derive all these benefits without troubling and confusing his mind with scientific terms and studies. How varied and wide the field of information is in this work, may be seen from the following contents:

PART I.—The Raw Materials of Plant Food.

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PART II.—The Available Sources of Supply.

What Our Soils are Made of; The Soil as Cheapest Source of Plant Food; The Essential Plant Foods and their Trade Values; The Worth of Domestic Manure; Value of Other Domestic Manures; The Concentrated Complete Manures; Where can We get our Nitrogen? Our Sources of Phosphoric Acid; Our Sources of Potash; Muck and its Possibilities; Flesh and Fish Composts; Table of Analyses and Valuations.

PART III.—Principles of Economic Application.

The Needs of Soil and Crop; Clover and Other Plants as Manure Crops; Plant Foods Needed in Ordinary Crop Rotation; Feeding Our Fruit and Vegetable Crops; Manures for Farm and Market Gardens; Fertilizers for Mucky Soils; Tests of Soil Fertility; Some Leading Principles.

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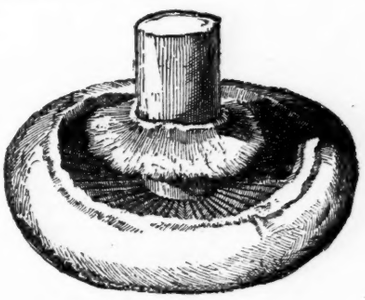

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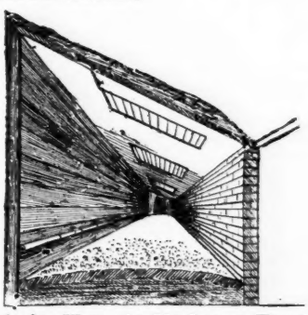

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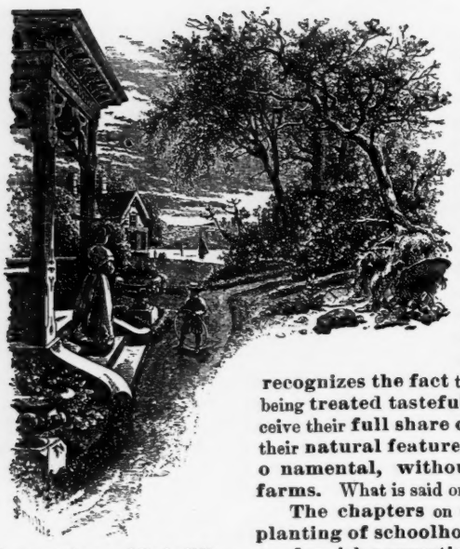

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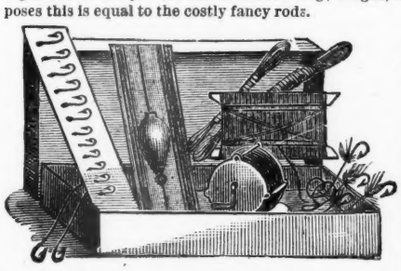

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